Would Stabilizing National Currencies Link to Higher Economic Growth

University of Greenwich

MSc Economics and Finance

Student ID: 001088761

Abstract

This empirical research will be looking into how the current account balance and national currencies affect the economic growth of a country and will be looking more specifically at the numerous economic shocks that the countries of the United Kingdom and Japan have faced in the past 30 years from 1985 to 2015. This research was based on the interest of seeing if there are any growth benefits to an economy if there is a higher degree of control over a nations currency through fiscal and monetary policy. From my model, it was not able to include every variable that was initially planned for due to time constraints and due to the complex nature of a nation’s economy. However, there was interesting insights to be gained from the data analysis. It was shown that even though the Japanese economy was less sensitive to fluctuations in their national currency as compared to the UK. Japan has faced a larger amount volatility in their growth with Japan falling into recession quiet frequently when compared to the UK. This has led to the conclusion that economies would have to have an approach that would limit large fluctuations in their current account balance and their exchange rates themselves rather than a having a policy that can absorb the shocks. A preventative measure to keep exchange rates and current account balance from being overly volatile seems more beneficial in the long term.

List of Abbreviations

|  |  |
| --- | --- |
| UK | United Kingdom |
| GDP | Gross Domestic Product |
| GDP per capita | Gross Domestic Product per capita |
| USD | United States Dollar |
| GBP | Great British Pound |
| IMS | International Monetary System |
| IMF | International Monetary Fund |
| TRC | Trade Reference Currency |
| ECB | European Central Bank |
| FED | Federal Reserve System |
| EMU | European Monetary Union |

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Introduction

This empirical research will be looking into how the current account balance and national currencies affect the economic growth of a country and be looking more specifically at the numerous economic shocks that the countries of the United Kingdom and Japan have faced in the past 30 years (1985-2015). A thorough comparison between the two countries of how much certain economic indicators have affected their countries individually and their overall growth journey in that time and to see if there are any insights to be seen in these comparisons. A further analysis of the effect of asymmetric shocks to the two economies will also be compared. There will be focus on their monetary policies and how a much growth they were able to achieve in that time period, looking at their GDP per capita. This paper will also be exploring some possible weaknesses pointed out by the current literature of the global monetary system, possible factors when it comes to economic growth by looking at different models to attempt to create an economic model to gain insights on the relationship between these variables and economic growth. This is all to see if there are ways for an economy to achieve more consistent economic growth that does not experience as many booms and busts in their growth trajectories.

Growth is achieved from having higher injections than withdrawals and that having an external equilibrium is key to this. I want to investigate what variables affect the consistency, stability and overall levels of growth like the external equilibrium. I believe having a stable currency would lead to the strong foundation for future growth. In the United Kingdom there have been three major recessions recorded for the UK since the 1980s. The 1980s recession caused by deflationary government policies involving spending cuts, pursuance of monetarism to reduce inflation and the switch from a manufacturing-based economy to a service based one. This had been from a string of economic problems that affected the British economy in the 1970s. The 1990s recession from a US savings and loan crisis, high bank rate in response to rising inflation caused by the Lawson Boom and to maintain British membership of the Exchange Rate Mechanism. Also including the great recession of 2008 subprime mortgage crisis infiltrated the British Banking sector, causing a significant credit crunch (Bell, 2020). These recessions had major effects for the United Kingdom but did not affect the UK as strongly as the recessions faced by the Japanese economy over this time period. Suffering from the Endaka recession, the great financial crisis and bursting of the bubble there are key insights to be seen on the comparisons of these countries’ sensitivity to these shocks and overall growth achieved despite of them.

Background Research

My initial interest in this topic mainly came from the 1997 Asian currency crash. This crash has wide scale effects from a contagion effect from Thailand’s Baht crashing. This caused the first blip in many East Asian countries growth rates as there had been consistent growth in most East Asian countries since the 1970s focusing on manufacturing and research and development (Sachs, 1985). This crash had resulted in a larger impact on unemployment and growth than even the great financial crisis of 2008. This made me to reflect on the effects of currency and if there is a larger issue that should be addressed. This led me to research the effect of currency crashes and how best to avoid them. To my surprise the frequency of currency crashes and financial crashes have been increasing in the past few decades (Caprio, 1996). It has been stated in many papers that this might be due to the fall of the Bretton woods system and Nixon taking the dollar of the gold standard in 1971 (Liatear, 2010). There was even immediate proof of a more unstable economic climate from those changes as the dollar become more volatile from being taken of the gold standard this caused other countries that were basing their currency on the dollar to become unstable as well and lead to more booms and busts in their economic growth. East Asian countries realised this however and had changed their currency to be backed by a basket of currencies that led to more consistent growth for them, while in Latin American countries still based their countries on the dollar had much slower economic growth (Sachs, 1985). This brings the question if there is a need to have some form of stabilization of national currencies that could lead to fiscal insurance of federalism, this topic is still debated (Kletzer, 1997) or if there is even a need for less volatile growth as even with the frequency of crashes the world’s economics are still on an upwards trend (International Monetary Fund, 2020).

Contribution

The contributions of this study are to see if there is a path for economies to follow that will allow a smoother growth experience for its populations with less recessions.

This study is to also see if there are any further insights to be made in the current understanding of the relationship between a countries current account deficit and their national currency by comparing the results of two developed nations of the UK and Japan.

Research Question

Thus, resulting in a more detailed research question of:

“Would Stabilizing National Currencies Link to Higher Economic Growth,”

And to hopefully answer other question of is it acceptable to have the risk or economic shocks if in the long term there is growth or is a more conservative approach more ideal to have more long-term growth compared to other countries.

Aims & Objectives (100)

1. The aims of the empirical study are to see the relationship between current account balance and the national currencies on Gross Domestic Product per capita. It is to measure the degrees of; how sensitive economies are to a shift in those variables and to see from the sensitivity of those economies, would a economy be able to adjust their policies to better handle the changes.
2. It would also be looking into if national currency changes would have even a large enough affect in the long run to see if there should be any major policy changes to accommodate for that risk or if the risks involved in a less supervised currency are acceptable.
3. To see if a nations currency could be a deadly factor that may impede their growth.

Research Structure

An exploring the current literature in the topic of national and international monetary systems and how they have affected performance for countries. Looking into the some of the negative side affects of policies that how monetary policies have been used to fix economic shocks such as the euro zone crisis. I will also be looking at current models of economic growth and to see what variables have been used in previous models that I can use for my own.

There will be analysis of the results from the model using panel data and graphical representations. This is in order to compare the two countries of the UK and Japan to garner any suggestions on achieving less volatile economic growth.

Literature Review

In this literature review I wanted to look at the literature on the current monetary system adopted by countries and the world monetary system as a whole. Some distinctions of the current world monetary system compared to the theories that were based on it years if not decades ago caused some conflict within the literature. The international transactional transactions occur in more open and efficient markets, interacting with flexible exchange rates. Adding to that a significant number of currencies back their national currencies on national currencies of larger more stable countries for example a lot of Asian currencies are backed by the dollar in the past and present. Also including, how in the case of European national currencies it has been replaced by the euro. Furthermore, the process of industrialization has become more diffused in the world, as a result of globalization and the decentralization of international investments (Lietaer, 2010).

Flaws of the International Monetary System

In the current academic papers, I have found so far there has been no clear consensus on the topic but the flaws of the current monetary system on currencies have been reviewed. Some researchers have previously approved the choices made at the time but fear that this system should not be the final step taken as there may be unforeseen issues that may arise over time (Kindleberger, 1978). One of the prominent researchers Bernard Lietaer has stated many times that the current monetary system in place is flawed but also states that the natural ecosystems are practical exemplars of sustainability, enduring, vital, adaptive but recommends for there to be parallel currencies that countries may have to use as a stabilizer for their own national currencies leading to more stable currencies that can result in less currency crashes (Lietaer, 2010). Bernard Lietaer wrote a paper to create a parallel currency that would be a crypto currency backed by a basket of commodities that all other currencies can use as a standard. He argued it would lead to more stable growth, more trade between countries and would lower the frequency of market crashes and their overall effect on the global economy (Lietaer, 2017). This would be a similar strategy taken by East Asian countries and Latin American countries in the 1970s, when they backed their currency to the dollar (Sachs, 1985). Dr Lietaer claimed that the trade reference currency (TRC) would

(a) provide a robust international standard of value, which makes it possible to insulate international trade from the uncertainties of conventional national money fluctuations.

(b) TRC units is excess inventory among producers or users of key commodities, and excess inventory is a key indicator of an incipient recession in the business cycle. Its emission therefore spontaneously counteracts the boom/bust fluctuations of the business cycle, thereby improving the overall stability and predictability of the world’s economic system.

(c) For those businesses that use the TRC as a planning tool, it would realign financial interests with long-term concerns.

Further saying that this system works well with existing legal and tax framework and does not need new international negotiations or agreements. Making it possible for any large financial institution to put it in place and offer it as a financial service for governments and large corporation in the global economy (Lietaer, 2017).

In the model that I will be using (explained in the methodology) it is mainly focussed on the external imbalances from demand and supply side factors in imports and exports. With the Marshal Lerner conditions for the absorption approach. I thought it would be prudent to look over some of the literatures on the findings of the topic and its effects on economic understanding. In a paper titled resurrecting Keynes, Alessandrini comes to mention some of the limitations of this approach. The International Monetary System (IMS) architecture is incapable of delivering external balances and facilitating smooth adjustments when imbalances are large and persistent. This is because financing is made easier by the liberalized capital movements. The second is that the exchange rate fluctuations are not enough to restore equilibrium due to a conflict of interest. They due state however that the equilibrium is only holding currently since the United States is keen on preserving the benefits of the key-currencies for their investments. Also, that foreign countries are keen on stockpiling US assets. An example would be the Latin American approach for economic growth mentioned above. In sum, the existing equilibrium aimed by the conservative strategy may be unstable and has the potential to unleash a world recession. (Alessandrini, 2009)

This paper does not go on to mention the relationships of demand of exports or imports of products in the global economy but states that the equilibrium found above cannot hold on for the long term. Thus, they are promoting the return to the Keynzian way of thinking of bringing back the Bretton woods system. Stating that the reasons why it had failed in the past were because the USA refused to provide a stable inflation rate and their preference to put their domestic issues over international ones. This showed that having the dollar as a national and international currency was unstable. They had adapted the basic principles of the Keynes plan to propose the creation of a supranational bank money that would coexist alongside national currencies and for the establishment of a new international clearing union. This was very similar to Liatear’s papers but there did not seem to be a connection in the paper to his work. There has been some applications of this, as USA, Germany and Japan have made an agreement to stabilize the relative prices of their currencies (updated after the Plaza-Louvre Accord (McKinnon, 1996). The plan was for this group of countries to harmonize their national monetary policies by partially sterilizing their interventions in the foreign exchange markets. Another application of this concept was Mundell (2005), who recommends a central bank monetary union among the Fed, the ECB and the Bank of Japan. These central banks would create “a platform on which to base a world currency on which every country would have a share.” Finally stating that a world currency would be the final step in the evolutionary process of the IMS. In an article by Popescu they showed that countries of a monetary union are exposed to different market reactions, generating more volatility in the business cycle: an economy undergoing a recession and a rise in the budget deficit might be affected by wide-ranging transactions of its government bonds, causing a liquidity crisis and superior interest rates, and possibly coercing the government of that economy to adopt budgetary austerity measures, thus intensifying the recession (Popescu, 2017). Thus, showing how a recession in a nation’s economy could have deeper and more long lasting effects than expected.

The Eurozone Crisis

Looking further into the literature, I wanted to find how exchange rate strategies could be used to handle asymmetric shocks. A big factor when it came to sustainable growth for me was how robust the current monetary system was, as even if you were able to achieve economic growth if it collapses from a shock to the system or the reaction to the shock was a net loss in growth in the long term there would be fundamental flaws in the systems being implemented. Following a paper done by De Grauwe in 2016 about how economies that are part of a monetary union issue debt in are a medium of exchange they cannot control: financial markets develop the capacity to impose default on such economies. This was commented by Dr GH Popescu looking into asymmetric shocks and warning that the current strategies may lead to a darker path. When economies are autonomous and they employ the exchange rate as a vehicle to handle asymmetric shock, it results in a constraint on exchange rate strategies. Saying that in a monetary union, if affected by a long-lasting asymmetric shock, demand wage elasticity and labour flexibility are used to fix the issues. However, if the later causes an even larger budget deficit, financial markets will intensify the negative consequences of the asymmetric shock. Leading to even more demand for wage elasticity and labour flexibility policies to be passed.

He explores more theoretical application of a monetary zone between independent countries and points out risks that might be involved in the endeavour. First stating that a multifarious union creates substantial possible advantages but that suspicion, confusion and the absence of data may lead to an increase in the risk of a failure. This could come in the form of risk distribution and transaction expenditure to lower. Further stating that when there is a monetary alliance between previously sovereign nations. The inclinations are that a forceful monetary policy will result in overwhelming disagreements. The European monetary system (EMS) is the current best example of an effort to unite the different monetary zones to create stability for a group of countries. However when the currency crisis occurred, there was a lack of flexibility in the system to handle that type of asymmetric shock. It was designed to be able to handle a symmetric shock but a asymmetric shock resulted in further issues of some countries gross government debt (%GDP) increasing substantially such as in the case of Greece and Ireland, from below 120% to almost 180% and below 30% to above 120% respectfully (Popescu, 2017). It was suggested in the paper that currencies should not be connected due to their geographical location and each country should hold its own currency. According to McKinnon the optimum monetary zone is where the single currency and a flexible exchange rate are the best solution to reach the three objectives. The three objectives are full employment, equilibrium of the balance of payments and the stability of the international prices.

Looking in detail at the former work done in 2016, De Gauwe looks into one of the most recent economic incidents of a currency crisis, the Eurozone crisis of 2010. That has been blamed for having major effects on the labour market of different European countries. The unemployment rate in Greece and Spain reaching 27% and caused a slowdown of economic growth. This was a balance of payment crisis that caused countries like Greece, Portugal, Ireland, Spain and Cyprus to be unable to repay their government debt or bailout their banks and needed the assistance of the European central bank (ECB) and the International Monetary fund (IMF). He challenges the understanding of the debt crisis and criticises the structure of the Eurozone and the reforms that were put in place to resolve the issue. De Grauwe is going as far as to blame poor fiscal policy that has left the Eurozone with unsustainable debt levels that will haunt them from a structural flaw in its design. Showing that despite the intense austerity programs that have been given to help debtor countries to service their debt there does not seem to be a slowdown of the debt ratio (with the exception of Ireland). This was because due to the intensity of the recession government revenue declined leading to higher budget deficits and thus also a higher debt ratio. Furthermore, the decline in GDP reduced the denominator of the debt ratio. The combined effect is that austerity led to an increase in the debt to GDP ratios. He also explained the design failure of the Eurozone to be the endogenous nature of the booms and busts cycle that happened at the national level but the monetary union has not disciplined their policies properly on a union wide scale. Adding to that the stabilizers that were in place before joining the Eurozone were taken away and was not set up on the monetary union level, leaving the member states vulnerable to this kind of shock (De Grauwe, 2016). Stating in his words that the Eurozone crisis has left a legacy of unsustainable government debt levels. Causing a deflationary dynamic in the Eurozone. Argue that the institutional innovations since the start of the debt crisis fall short of what is needed to solve the design failures of the Eurozone due to bureaucratic institutions have been responsibilities without a increase in the capabilities of those democratic institutions (De Grauwe, 2016).

This led me to the realization that the many papers had been written recently on this topic on how to stabilize the currency looking at the eurozone crisis. Zeller giving out the economic advantages of it but later saying that community currencies are only sometimes economically advantageous. We focus on seasonal changes in money supply and assume that community currencies stabilize the money supply in a local community. This leads to additional transactions during seasons of insufficient supply of national currency. He hypothesizes community currencies are therefore economically advantageous in a surrounding of seasonally insufficient money supply (Zeller, 2020).

Milačić further praises the European Union. Starting of by stating that as challenging as the Eurozone crisis was it did prove that the euro is a stable currency and that criticism that the European Monetary Union is the cause of the crisis is controversial at best. He argued that the Eurozone has contributed to a growth in output, transaction costs decreased and the allocation of capital in the Eurozone was effective. Blaming the fiscal policies as the cause for the crisis and that having a central currency and abandoning their national currencies was a success. The theory of optimum currency areas points out the common economic characteristics of the countries as a prerequisite for their successful functioning. The authors examine the problems the European Monetary Union in the circumstances of the global economic crisis. They especially elaborated the battle for the financial stability of the European Monetary Union. Showing that a Monetary Union requires a continuous work on reducing the gap on unemployment, inflation, the labour market institutions, GDP growth and fiscal balances of other countries. This can be achieved by creating the EMU strengthening the monetary policies that are decided on by an institution of high quality. Adding to that the euro as a common currency tightened cross-border competition, the customers had lower transactions cost and the market as a whole functioned better for it. Furthermore, advocating for real convergence and for that to happen there must be stable prices, the level of inflation and the amount of the budget deficit that cannot be exceeded, fiscal discipline and exchange rate stability. However, from the economic crisis and Brexit a redesign the European Monetary Union had to formed. The European financial stability facility was born however due to lack of public support, there are still issue of stability due to the large gaps currently still in place (Milačić, 2020).

Growth Models

For me to do my empirical study, I thought it prudent to have looked into more mathematical looks on growth and exchange rates. Using time series data, Dr Valentina V. Tarasova has a look into a generalization of model of economic growth with constant pace. The bit that I’m interested is how he factored in the effect of dynamic memory. He explained memory as ‘endogenous or exogenous variable at a given time depends not only on their value at that time, but also on their values at previous times,’ (Tarasova,2017). He shows the use of derivatives from an economic growth model that his equation (3) does not take into account the effects of memory. The dynamic memory means a dependence of output at the present time on the investment changes in the past. Showing the limits of some economic models. He later concludes that economic models should consider the memory effects, based on the fact that economic agents remember the history of changes of exogenous and endogenous variables that affect the economic process (Tarasova,2017) showing the importance of lag variables in the model.

I also wanted to consider other growth models to see if there are other models that could be used for economic growth. The Solow model is a response to the theoretical problems of the Harrod-Domar model, it uses a Cobb Douglas production function so that labour and capital are substitutable, and the production function is u shaped. Assuming perfect competition in a closed economy. Using capital per capita (capital per effective worker) as its dependant variable the models measures output per effective worker, size of the labour force and the exogenous: fixed propensity to save, growth rate of the labour force, rate of capital depreciation. This is the Solow model with technical progress as if we did not, there would be a convergence towards the steady state equilibrium. Studying the Solow model, we can infer that if the structural parameters are identical across all countries then all countries must converge to a common level of per-capita income regardless of their initial starting point. This is stated to be called unconditional convergence, the argument states that poor countries have higher marginal product of capital than rich countries and therefore grow faster. Furthermore, history does not matter at all for long-run development. There is no path dependence. Lastly if developing countries allow for foreign investment to flow in they will reach convergence in a more rapid pace.

There is however a conditional convergence as well, structural parameters (technology, population growth and savings) would differ across countries so countries will converge to their own steady states of per capita income level and all countries may not converge onto one point due to the differing structural parameters. Baumol 1986, showed in his graph of the 16 most developed countries that the Solow model was correct and there was a convergence. However, the paper was criticised for having some of its fact wrong (e.g. in 1870, Japan was not one of the richest countries but was on the list but Argentina, east Germany and Portugal were rich but not on the list) (Baumol, 1986).

There is more support for the Solow model as Mankiw et al. (1992, quarterly journal of economic 107, 407-437) have suggested that an augmented Solow model can account for 80% of the variations in output due to different steady state growth paths as mention before different countries have different structural parameters. Hamilton in 1998 investigated Mankiw’s research and went a step further seeing if changes in growth rate from the 1960 to 1980s can also be explained by this. His conclusion was that investments in physical capital were more significant to changes in growth rate rather than human capital, which is going against the grain of Solow’s model but does agree with Mankiw et al that an augmented Solow model does account for the variations (Hamilton, 1998). Andrey, in his 2011 paper stated that there was a rather strong evidence for unconditional convergence among all large countries and that other papers questioning convergence were stating that it is conditional rather than not happening. These existing models were very influential when creating my model. Research this topic to see which variables in an economy would create volatile or stable growth for the economy. To see if there are major effects in considering the stable nature of monetary policies and to see if there are any key point that have been shown to create problems for the national and international economy.

Methodology

As discussed above the link between having a stable national currency or having volatile national currencies from policies are going to be investigated in this study. I will be running panel data analysis of the economic growth of United Kingdom and Japan and the variables associated to their growth.

Research Method

I had initially looked into doing a time series analysis of the data using an ARIMA model, including Wold’s decomposition theorem. However, due to me wanting to test many factors to see their effects on economic growth rate per capita it was too difficult to fit it into one model. Even using the Box Jenkins method of producing models and creating differentials for each data point so that the data can be worked together I was unable to find a way to factor in key components such as exchange rate, the structural budget and other variable into the model for me to see how the each variable would interact. I wanted to have the approach of making the data speak for itself no matter the results that came out. The panel data model was more feasible as attempted to reach the conditions for stationary time series of stationary in mean, stationary in variance and stationery in covariance. I had also tried to use ready available software such as Auto ARIMA to help me find a model that I could work with but it was later shown that the models chosen are not necessary better than what a human could produce.

I also considered using a AR model as they are from within the same class of models (in one sense they share the same degree of complexity. With the approach in mind the principle of parsimony but even going for a parsimonious model, I could not make the data work. I had therefore chosen to us panel data for my research. Some of the advantages that I had taken into consideration rather than using time series data was that heterogeneity would not have been observable with time series, with panel data I can explicitly take them into account by allowing subject specific variables. Also, from the more obvious reason that with panel data it gives more informative data and more variability. Furthermore, panel data is better at measuring the effects of dynamic change such as the effects of crashes and the waves of increases and decreases of economic growth indicators. I will be looking at the period between 1985 until 2015. This is shortly after the fall of the Bretton woods system and I believe the data up until 2015 is reliable and can be used for analysis. Furthermore, the number of time observations is large compared to the small number of cross-sectional data is small making it so that there is little difference in the value of the parameters estimated by random effects models and fixed effects model. I decided to rely on computational convenience because of this and limited time and ran a pooled OLS regression.

My plan is to compare the two countries of the United Kingdom and Japan. In terms of their GDP per capita and how sensitive their economies are to current account and exchange rate changes. The current account balance, GDP, GDP per capita and investment for both the UK and Japan are all in USD current price to make my data consistent. The population is measured in people and the two exchange rates I recorded were GBP/USD and USD/YEN. I will also be looking at growth over the past 30 years and any other large economic shocks the two countries may face. To have comparisons between each country and their independent variables for each economy’s growth, I will be running two regression. One for the United Kingdom to see how the independent variables for that nation have affected its growth and One for the Japan with the same independent variables but the data for Japan. This is to compare each nation economic indicators and their impact on their respective economies. Allowing me to see which nations currency and current account balance has a higher affect on their growth levels. I will also be looking at the data graphically for GDP, GDP per capita, current account balance, Investment and Population to see if there are any connections to be made.

Model Specification

Country Selection and Data Sources

I have chosen the G7 countries of the UK and Japan as they use to be the G5 of finance ministers that would come to discuss monetary policies, including fixed exchange rate models. They are all developed countries with ready available macro data (Hajnal, 2019). Whenever possible I will choose to gather data from the IMF (International Monetary Fund). Data at these organizations is trusted and they are consistent in their measurements. This is also to avoid any inconsistencies in measurement in each country personal data sources and to help eliminate endogenous bias in my data from countries trying to pain their data in a more favourable light. These countries were also chosen because a paper from the European central bank had factored in market forces and concluded that 80% of the time the G7 countries were successful in their polices on the G3 currencies and their policy makers but it was only effective for the 3 months of the initial shift in policy. The G3 currencies being the Japanese Yen, European Euro and the United States Dollar. It was also said that when G7 countries did not play a role in controlling the currency the currencies would sometimes come out of desired alignment (Fratzscher,2010).

The Group of Seven (G7) is an international intergovernmental economic organization consisting of seven major developed countries: Canada, France, Germany, Italy, Japan, the United Kingdom and the United States, which are the largest IMF-advanced economies in the world. They are members of key industrialized economies, with the most influential institutions for international policy coordination and global governance. One of their major policies has been in the management of major exchange rate configurations. This should be contributed to the polices made by these governing bodies but the market forces at play should not be dismissed as currencies tend to revert to more sustainable levels over time (Fratzscher, 2010). Adding to that the European market and Asian market have experienced currency crashes that are relevant to the study.

I had decided not to use developing countries from Latin America because Asian countries have fixed exchange rate system with lots of foreign currency reserves and high export growth leading to phenomenal growth while in Latin America, they started to do the same but stopped, leading to their downfall in 2002-2003 (Dooley, 2004). In Latin America, those impatient for growth through exports will favour free trade, fixed, undervalued rates with the dollar, intervention and capital controls; in short, the Asian model of development. In contrast, central bankers and the IMF favour floating rates and capital mobility and therefore the capital account region, in short, the European model similar to the UK. As converging countries, emerging market countries in Europe must naturally follow the euro. Emerging markets in Asia are not likely to miss this opportunity to displace their rivals in US markets (Dooley, 2004).

The data itself will be gathered from the IMF as they are a trusted international organisation with consistent measurement across all countries. This was chosen over domestic data as there could be bias in the data. Lastly, there is a large amount of data from both these countries in the IMF.

Variable Specification

GDP growth rate per capita

For my dependant variable I will be using GDP growth rate per capita in US dollar from 1980 to 2019, current price. I will be gathering the data for GDP and GDP per capita for both countries. As one of the major markers of stability in the economy I chose GDP many of the independent variables that I will be looking at are factored into GDP and are a major component of it such as Exchange rates, demand and supply of imports and exports affecting the current account balance. Furthermore, there are other economic indicators such as expenditure and investment that are a major part of the economy that is factored in GDP per capita. Adding to that, I will be looking at the per capita growth of GDP rather than GDP as the study was initially founded from the economic effects of currency crisis and their effect on the average person. Having a per capita reading helps in making it more relevant to the individual and is accurate indicator of economic prosperity as the averages are looked at.

Current Account Balance and Exchange rate

For the variable specification for my independent variables, I wanted to go into detail on how exchange rate changes affect the current account balance and GDP. Exchanges rates affect GDP through export and import. The currency depreciates or appreciate and affects balance of payments. The elasticities approach to devaluation looks at the relative price effects of a devaluation on the balance of payments, which it analyses in terms of the supply and demand of exports and imports. Foreign exchange can be obtained exclusively by exporting and the only need for foreign exchange is to pay for imports. When disequilibrium occurs, the goal of the devaluation is to bring the supply and demand of foreign exchange into equilibrium.

The Marshall-Lerner condition is a more precise statement of the requirements for stable equilibrium in the foreign exchange market. Assuming infinite supply elasticities for imports and exports, it states that devaluation will always improve the trade balance if the sum of the demand elasticities for imports and exports is greater than one. The IMF, however, does estimate demand elasticities for its world trade model. In spite of the empirical difficulties in measuring the relevant elasticities, the elasticities approach is a theoretically sound short-term explanation of the reaction of the balance on current account to exchange rate changes. To the extent that these reactions can be observed and do tend to occur, it has considerable analytical value. However, the approach does suffer from some confusion and inconsistency arising from the use of two units of account, national currency and foreign exchange, in the measurement of the relevant variables. Furthermore, it omits time lags and capital movements but it’s more important shortcoming is that it neglects devaluation-induced effects on income and expenditure.

In the income effect a deterioration in the terms of trade tends to reduce domestic income. The second effect depends on the demand elasticities and on whether or not the economy is working at full capacity. If the economy is running at less than full capacity, the increased demand for exports and import substitutes should increase output and employment in industries producing these products. If the economy is running at or near full capacity, however, supply elasticities are likely to be low and the increased demand will translate into price increases.

The third effect is the most important and concerns resource allocation. Income should increase if the relative price changes induced by the devaluation improve resource allocation by transferring factors of production to sectors where they are more productive. For long-term external equilibrium, this is a key consideration. Finally, there may be other diverse effects from devaluation such as anticipated price rises inciting immediate consumption or a high import content in investment goods causing a reduction in investment because of the higher cost of imports. In this context the devaluation will improve the external balance on current account. With a surplus in the current account there is a rise in GDP. This is how exchange rate affects the GDP. Change of GDP over time determines the rate of growth of economy. Therefore, I believe it to be important in this study to put exchange rates and the current account balance as each market force has a direct and indirect affect on the GDP. There is the issue of having endogeneity but for macro-economic models this was difficult to separate. I will be using a lag of the daily Pound/Dollar exchange rate and Dollar/Yen exchange rate. I have also put a lag on the current account balance. This is due previous results of these economic indicators have a high chance of affecting the current results. Furthermore, the current account balance is in US dollar, current price. The current price was chosen as to lower the effect of inflation on my data. I will also be gathering the current account balance for each nation to be used for their respective regressions.

Investment and Population

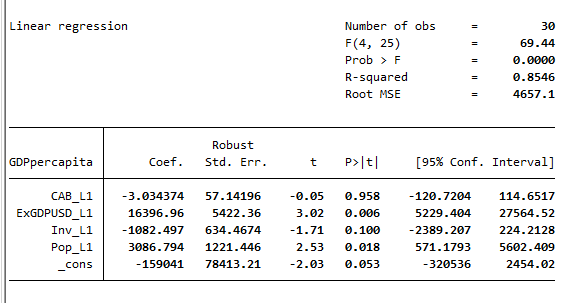
I have also included other variables into my model that has been shown to be relevant when it comes to economic growth. This is in hopes of lowering any heterogeneity problems but may cause endogeneity issues in my model. I included total investment into my model and population as it was shown in the Solow model to have an effect when it came to economic growth. As total investment rose there was more output and thus a larger chance that this would push the balance of payments into the positive that in theory should help in growth. Furthermore, with higher population the total increase in output would also be predicted to rise as well given that the productivity of the population was at its maximum. For this I will be assuming that the marginal benefit of productivity in both investments and the country’s population are at a maximum and that there cannot be any further increase in production. This to be stated is rather unrealistic as complete maximisation is nearly impossible but for this model this is assumed. The Solow model was based more on manufacturing based economies and industrializing or just recently industrialized countries. Both of these countries are already developed and have shifted to a more service based economy but Japan still hold a lot of manufacturing roots focusing on exports of their goods. This may affect the data in but it is precisely because of these differences that these comparisons have value in my opinion. I will be comparing their growth over the past 30 years and to see how sensitive their economies are to exchange rate and current account changes.

I have also decided to put a lag in the current account balance, investment and population as a lagged dependent variable. It makes sense to include a lagged dependant variable as I expect that the current level of the independent variables is heavily determined by its past level. In that case, not including the lagged independent variable will lead to omitted variable bias and my results might be unreliable. I will also be gathering the investment and population of each country to be used in their respective regressions.

Empirical Results

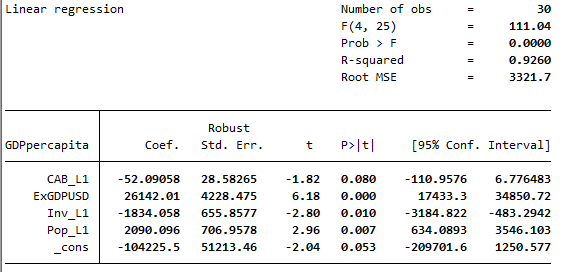
UK’s DATA

I ran a pooled OLS with lag independent variables to solve for the autoregression problem. My first model I had put all my independant variables to a lag of 1. I came up with some interesting results. I later decided to run a robust regression to lower the influence of any outliers in my data and resulted in a higher R-squared value.



(International Monetary Fund, 2021)

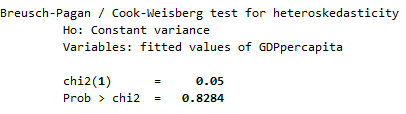
I had initially decided to run my model, but my current account balance variable and my investment variable had a p-value too high for it to be significant in any level. I decided to remove the lag on my exchange rate of GBP/USD. All my other variables had a p-value below 5% or even 1% making them significant at that level. I also had a R-squared value of 0.8546. Lag dependant variable with no lag on exchange rate GBP/USD



(International Monetary Fund, 2021)

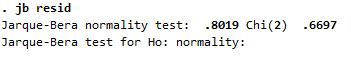
This change had resulted in all my variables being significant at the 1% level and resulted in a higher R-squared of 0.926. With more confidence in my results the readings were interesting as the current account balance seemed to have a negative affect on the GDP per capita. This might be due to the fact that the UK has been in a current account deficit since 1985 and continues to be in an even more growing deficit over the past 30 years but they have seen phenomenal growth. Even beating Japans growth in GDP per capita by 175.35% (calculations shown below). This would suggest that the UK operates well under a current account deficit, even growing because of it. Unsurprising the exchange rate had the largest impact on GDP per capita with a coefficient of 26,142.01 but it will be most beneficial when we compare it to Japans. Surprisingly, Investment seems to have a negative impact on GDP per capita but further research on what types of investment and the opportunity cost of it may be required. Lastly with rising population that seems to be positively impacting the economy, this would be supporting the Solow model of growth for the economy.

Test for heteroskedasticity



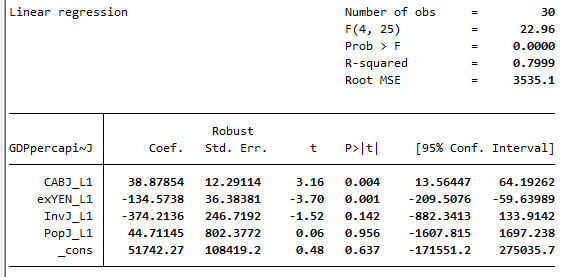
When testing for heteroskedasticity, the model got a 0.8284. I reject the null hypothesis making my data homoscedastic. The variance in my data is around the same finite value allowing me to move on with my data.

Test for normality



I got a .6697, I reject the null hypothesis, making my data normal. I tested for normality to see if my data set is well modelled by a normal distribution and to check if to see if any of the random variables underlying the data set are normally distributed. It is the random error in the relationship between the independent variables and the dependent variable in a regression model.

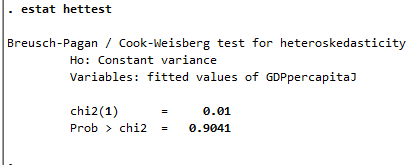
Japan’s data



(International Monetary Fund, 2021)

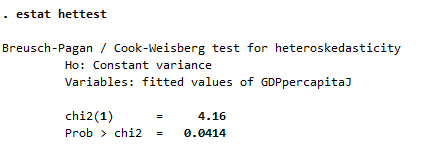
I had initially removed the lag variable of exchange rate of the USD/YEN, but my data was heteroskedastic. However, when I added the lag variable for the exchange rate I ended up with a better mode. With a R-squared number of 0.7999 and two of my variables of the current account balance for Japan and the exchange rate were significant at the 1% level. However, my variables for investment in Japan and Population in Japan had a p-value of higher that 10% making it unreliable but for the purpose of this study I am more interested in the current account balance for Japan and their exchange rate. The current account balance seems to have a positive impact on GDP per capita for Japan. This would make sense as the current account balance of the Japanese economy has always been at a surplus in the past 30 years. Focusing on a surplus of exports, this has led to the Japanese economy growing but maybe they might have grown more if they had adopted a similar approach to the UK government. There is a point of interest to the Japanese data that should be mentioned in this study before making a conclusion but that will be discussed further below. For the exchange rate a coefficient of -134.5738 was reached. Now making the conversion from Yen to pound so they can be compared. A coefficient of 19,752.74 was given current exchange rates. This was done so because the pound exchanges for 146 yen. This conversion was made as a 1 unit of change in the pound has a much larger affect than a 1 unit change in the yen. This will allow for the two coefficients to be compared more fairly. Comparing the UK’s economy of 26,142.01 the Japanese economy seems to be less affected by changes in exchange rate of their currency. Thus, these results would make sense as the Japanese government has a more active approach when it came to their currency with more active monitoring.

Heteroscedasticity test



Testing for heteroskedasticity, the model got a 0.9041. I reject the null hypothesis making my data homoscedastic. The variance in my data is around the same finite value allowing me to move on with my data.

Heteroscedasticity test



This test was for my model without the lag term for the exchange rate. It came out as 0.0414, lower than the 0.05 threshold making my data heteroskedastic and unreliable. I later added the lag term.

Gross Domestic Product

Comparing the two countries of the United Kingdom and Japan and how much each of their exchange rates have affected their GDP growth and GDP per capita growth looking at it graphically.

(International Monetary Fund, 2021)

The UK has been experiencing steady growth with no major recession except the great financial crisis of 2008.They have experienced an overall growth in GDP of 445.56% in the past 30 years.

Japan has also seen a period of growth in the past 30 years.

(International Monetary Fund, 2021)

Japan has seen a growth of 213.78% in the past 30 years. However, the growth has been much more volatile as there have been several periods of recession in the currency crash of 1997, the dot com bubble in 2001, with the financial crisis of the 2008 also showing signs of troubling the economy. This was all after the bursting of the bubble in the 1980s. The largest dip been shown to be after the one of the largest earthquakes in history of 9.0 in 2011. It does not seem the Japanese economy has been able to stabilize since then that has most likely led to a omitted variable bias on my data as even though the UK has seen more growth of 231.78% when comparing the amount of growth from the initial starting point for each nation. The gap was smaller at 102.16% pre earthquake. Before the earthquake, the Japanese economy had an increase of 343.4%.

Gross Domestic Product per Capita & Population

(International Monetary Fund, 2021)

Even with the UK’s population steadily increasing with the population growth rate rising even faster past 2002. The GDP per capita has increased by 373.87% in the past 30 years with only a small dip in 2008.

(International Monetary Fund, 2021)

The Japanese has had growth in GDP per capita of 198.52% over the past 30 years. With a population on the slow decline in past few years. The UK outperformed Japan in terms of growth by 175.35%. Even with its larger initial population of 121 million compared to the UK’s 56 million.

(International Monetary Fund, 2021)

Current Account Balance & Exchange Rates

(International Monetary Fund, 2021)

The UK economy have been operating largely on a current account deficit with the balance only seemingly only getting closer to reaching equilibrium past 1989 and 2008. This might be due to the Margaret Thatcher administration reducing inflation, reducing the budget deficit and increasing the efficiency of the economy.

(International Monetary Fund, 2021)

The current account balance for the Japanese economy has been in the positive for the past 30 years with the largest dips in 2008 and a further decline in 2011. However there does seem to be a recovery since 2014.

(International Monetary Fund, 2021)

The exchange rate for GBP/USD has been more volatile compared to the Japanese Yen with a variance of 0.8637 with the average exchange rate being at 1.623 dollar for the pound over the past 30 years. Thus, there is a fluctuation of 26.56% in exchange rate over the past 30 years. Analysing the Japanese yen there was a substantial drop from 1985 to 1987 from 256.25 yen to the dollar to 152.23. Upon further research this was from the Endaka recession of 1985 and 1986 that caused a recession from an appreciation of the Japanese Yen (Okina, 2001). I will be disregarding that area of the data as that was due to the bursting of the bubble economy from high expectation for bullish assets. Japan has reformed by focusing more on their monetary policy on a framework of both price stability and financial system stability. Therefore, I do not believe it to be prudent to include the initial drop in the data. The exchange rate for USD/YEN has had a variance of 75.63 with the average being at 120.82 Japanese yen to the dollar. This is a fluctuation of 31.3% resulting in the Japanese yen to be more volatile than the Great British Pound.

(International Monetary Fund, 2021)

Discussion

To fulfil my initial aim of finding out if having more stable currency will lead to more stable economic growth, I believe I have come closer to that question but is still too presumptuous to conclude as of now. As I was able to compare two developed countries with different economic policies for their growth strategies as the data suggests in the current account deficit. A more in-depth research looking at more dependant variables and a larger range of countries would result in a more accurate statement but for the limitations of time this study has produced some interesting results. Both countries have produced a large amount of growth to GDP per capita for its citizens. With both increasing it by triple if not more in the past 30 years. With the UK experiencing a more stable rise as Japan was in contact with many financial crashes and natural disasters compared to the UK. Furthermore, Japan has also shown a larger variance in its exchange rates. However, from the model produced Japan experiences less affects to changes in their exchange rate, making them more capable of handling sudden changes in exchange rates. So to summaries the UK has seen less volatility over the years while Japan has had much more volatility from outside sources but Japan has shown to being able to handle changes better than the UK. Therefore, the UK with more stable variables have seen the most growth in GDP per capita even with a rise in population and a rise in the population increase rate. Thus, it would be suggested that having a more stable currency would lead to more growth even though the UK is more sensitive to currency shocks, if there is such a low risk of there being a shock to their currency (such as a currency crisis) it would be ok to take on more policies that do not have the currency account deficit and the exchange rate as a high priority on the list as economic indicators to monitor. Showing evidence of this as the current account deficit only seems to grow as the UK economy grows. Perhaps suggesting that the UK worries less about its exchange rates and current account deficit.

After the initial fall in exchange rate of USD/YEN in 1988 there has been a period of more stability for the currency but for the Japanese economy there seems to be, looking at the data a shock to their economy every 3-5 years that leads the economy back into a recession when they had only just recently recovered from it. With the current account deficit experiencing booms and busts along with the economy. They are less sensitive to shocks as the data suggests but also showcased in the 1997 Asian currency crash as Japan was one of the effected economies but was able to recover quickly from the shock. Also, how even though there were huge fluctuations in the Yen in 1985 and 1986 the Japanese economy was still able to grow in those years. However, they did produce much less growth compared to the UK. This I would argue was due to other shocks rather than anything to do with the nation’s currency. Therefore, trying to isolate the effects of Japans currency fluctuations in their economy is difficult as even though they have a more active approach of managing their exchange rates and having a positive current account deficit they have experienced less growth due to other factors. It could be argued from the previous conclusion that Japan’s economy might have been even worse if they did not have these policies. For example, the currency crisis of 1997 could have been much worse if not for the Japanese governments approach to their national currency. From this the focus of economies would be to have an approach that would limit large fluctuations in their current account balance and their exchange rates themselves as even if as an economy you are able to handle the shocks better than other countries if a country is able to have a period of stability, that type of environment looks to be more conducive to growth. As shown with the UK having more stable growth dealing with less shocks than Japan that has had less growth due to the many shocks they experienced. Lastly, further research would be required to come to a more decisive conclusion with more countries, more variables to account for economic growth and using more complex models to have a more precise and reliable conclusion.

Conclusion

To conclude, this research was based on the interest of seeing if there are any growth benefits to an economy if there is a higher degree of control over a nations currency through fiscal and monetary policy. The current literature is quick to point out the flaws of national and international monetary policy on national currencies. They also offer solutions to the issue by suggesting the formation of a more formalized international monetary union with the required infrastructure to enact policies of a more global scale to reinforce the structural stability of the worlds monetary system. With even further suggestions to enact a form of global currency that is not tied down the influences of nations domestic issues but is treated as a backer to all currencies and a medium of exchange. From my model, it was not able to include every variable that was initially planned for due to time constraints and due to the complex nature of a nation’s economy. However, there was interesting insights to be gained from the data analysis. It was shown that even though the Japanese economy was less sensitive to fluctuations in their national currency as compared to the UK. Japan has faced a larger amount volatility in their growth with Japan falling into recession quiet frequently when compared to the UK. This has led to the conclusion that economies would have to have an approach that would limit large fluctuations in their current account balance and their exchange rates themselves rather than a having a policy that can absorb the shocks. A preventative measure to keep exchange rates and current account balance from being overly volatile seems more beneficial for growth in the long term.

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Appendix

UK’s Data

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Year | GDP | GDP per capita | Investment | Population | Current Account Balance | Exchange rate GDP/USD |
| 1985 | 536.92 | 9493.936 | 20.062 | 56.554 | -1.547 | 1.1278 |
| 1986 | 655.064 | 11556.43 | 19.934 | 56.684 | -6.304 | 1.3675 |
| 1987 | 812.98 | 14312.01 | 21.337 | 56.804 | -12.806 | 1.5177 |
| 1988 | 989.542 | 17386 | 23.565 | 56.916 | -34.912 | 1.76 |
| 1989 | 1007.421 | 17650.22 | 24.664 | 57.077 | -40.911 | 1.75 |
| 1990 | 1193.662 | 20854.37 | 23.147 | 57.238 | -36.766 | 1.6815 |
| 1991 | 1247.854 | 21724.85 | 20.306 | 57.439 | -16.564 | 1.966 |
| 1992 | 1289.035 | 22384.9 | 19.151 | 57.585 | -19.726 | 1.7964 |
| 1993 | 1154.094 | 19996.77 | 18.687 | 57.714 | -15.266 | 1.458 |
| 1994 | 1239.69 | 21424.95 | 18.721 | 57.862 | -6.002 | 1.489 |
| 1995 | 1341.848 | 23125.34 | 18.563 | 58.025 | -9.077 | 1.5802 |
| 1996 | 1416.807 | 24358.83 | 18.771 | 58.164 | -8.175 | 1.5127 |
| 1997 | 1559.407 | 26741.55 | 17.613 | 58.314 | -0.737 | 1.6041 |
| 1998 | 1650.331 | 28222.84 | 17.95 | 58.475 | -8.239 | 1.6383 |
| 1999 | 1682.817 | 28675.9 | 17.972 | 58.684 | -41.538 | 1.6363 |
| 2000 | 1660.959 | 28206.34 | 18.317 | 58.886 | -37.594 | 1.6001 |
| 2001 | 1640.667 | 27754.76 | 18.135 | 59.113 | -33.898 | 1.4755 |
| 2002 | 1787.291 | 30106.3 | 18.15 | 59.366 | -36.707 | 1.4112 |
| 2003 | 2054.89 | 34456.63 | 17.656 | 59.637 | -36.265 | 1.6382 |
| 2004 | 2418.023 | 40334 | 17.552 | 59.95 | -56.192 | 1.838 |
| 2005 | 2541.533 | 42069.3 | 17.709 | 60.413 | -49.534 | 1.8885 |
| 2006 | 2717.572 | 44677.07 | 18.057 | 60.827 | -75.751 | 1.7756 |
| 2007 | 3102.069 | 50589.03 | 18.478 | 61.319 | -102.945 | 1.9685 |
| 2008 | 2953.574 | 47773.91 | 17.45 | 61.824 | -116.103 | 1.9915 |
| 2009 | 2419.537 | 38861.2 | 14.748 | 62.261 | -80.643 | 1.4132 |
| 2010 | 2477.672 | 39478.53 | 16.002 | 62.76 | -78.565 | 1.594 |
| 2011 | 2660.223 | 42035.6 | 15.659 | 63.285 | -46.869 | 1.6202 |
| 2012 | 2705.367 | 42467.11 | 15.867 | 63.705 | -92.825 | 1.583 |
| 2013 | 2787.835 | 43487.9 | 16.021 | 64.106 | -132.71 | 1.5832 |
| 2014 | 3065.4 | 47454.22 | 17.11 | 64.597 | -144.753 | 1.6333 |
| 2015 | 2929.238 | 44989.06 | 17.415 | 65.11 | -143.698 | 1.506 |

Japan’s Data

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Year | GDP Japan | GDP per capita Japan | Investment Japan | Population Japan | Current Account Balance Japan | Exchange Rate USD/YEN |
| 1985 | 1,398.89 | 11,580.20 | 29.921 | 120.8 | 50.18 | 256.25 |
| 1986 | 2,078.95 | 17,118.39 | 29.868 | 121.446 | 84.522 | 190.93 |
| 1987 | 2,532.81 | 20,755.51 | 30.921 | 122.031 | 84.253 | 152.23 |
| 1988 | 3,071.68 | 25,065.13 | 32.981 | 122.548 | 79.173 | 128.37 |
| 1989 | 3,054.91 | 24,830.99 | 33.751 | 123.028 | 63.142 | 129.27 |
| 1990 | 3,132.82 | 25,379.60 | 34.471 | 123.438 | 44.709 | 144.67 |
| 1991 | 3,584.42 | 28,923.31 | 34.168 | 123.928 | 68.116 | 131.9 |
| 1992 | 3,908.81 | 31,429.62 | 32.511 | 124.367 | 112.394 | 125.65 |
| 1993 | 4,454.14 | 35,698.91 | 30.744 | 124.77 | 131.918 | 124.44 |
| 1994 | 4,907.04 | 39,219.81 | 29.545 | 125.116 | 130.543 | 108.2 |
| 1995 | 5,449.12 | 43,441.33 | 29.883 | 125.436 | 110.422 | 99.5 |
| 1996 | 4,833.71 | 38,450.96 | 30.865 | 125.711 | 68.937 | 107.04 |
| 1997 | 4,414.73 | 35,034.54 | 29.951 | 126.011 | 95.154 | 121.96 |
| 1998 | 4,032.51 | 31,915.74 | 28.515 | 126.349 | 115.094 | 125.88 |
| 1999 | 4,562.08 | 36,039.08 | 27.119 | 126.587 | 114.243 | 112.27 |
| 2000 | 4,887.52 | 38,535.59 | 27.307 | 126.831 | 130.654 | 108.57 |
| 2001 | 4,303.54 | 33,850.88 | 26.56 | 127.132 | 86.186 | 115.41 |
| 2002 | 4,115.12 | 32,300.67 | 24.656 | 127.4 | 109.125 | 132.59 |
| 2003 | 4,445.66 | 34,831.20 | 24.397 | 127.634 | 139.413 | 117.81 |
| 2004 | 4,815.17 | 37,696.72 | 24.349 | 127.734 | 182.051 | 105.72 |
| 2005 | 4,755.41 | 37,223.77 | 24.749 | 127.752 | 170.135 | 104.04 |
| 2006 | 4,530.38 | 35,463.87 | 24.749 | 127.746 | 174.535 | 118.14 |
| 2007 | 4,515.26 | 35,342.48 | 24.483 | 127.757 | 212.138 | 121.41 |
| 2008 | 5,037.91 | 39,453.49 | 24.548 | 127.692 | 142.601 | 106.51 |
| 2009 | 5,231.38 | 41,014.19 | 21.324 | 127.551 | 145.25 | 91.92 |
| 2010 | 5,700.10 | 44,673.61 | 21.298 | 127.594 | 220.985 | 90.75 |
| 2011 | 6,157.46 | 48,168.80 | 22.103 | 127.831 | 129.834 | 82.57 |
| 2012 | 6,203.21 | 48,632.90 | 22.654 | 127.552 | 59.703 | 76.6 |
| 2013 | 5,155.72 | 40,490.16 | 23.191 | 127.333 | 45.944 | 92.71 |
| 2014 | 4,850.41 | 38,156.33 | 23.916 | 127.12 | 36.794 | 104.31 |
| 2015 | 4,389.48 | 34,568.93 | 24.023 | 126.978 | 136.437 | 117.78 |