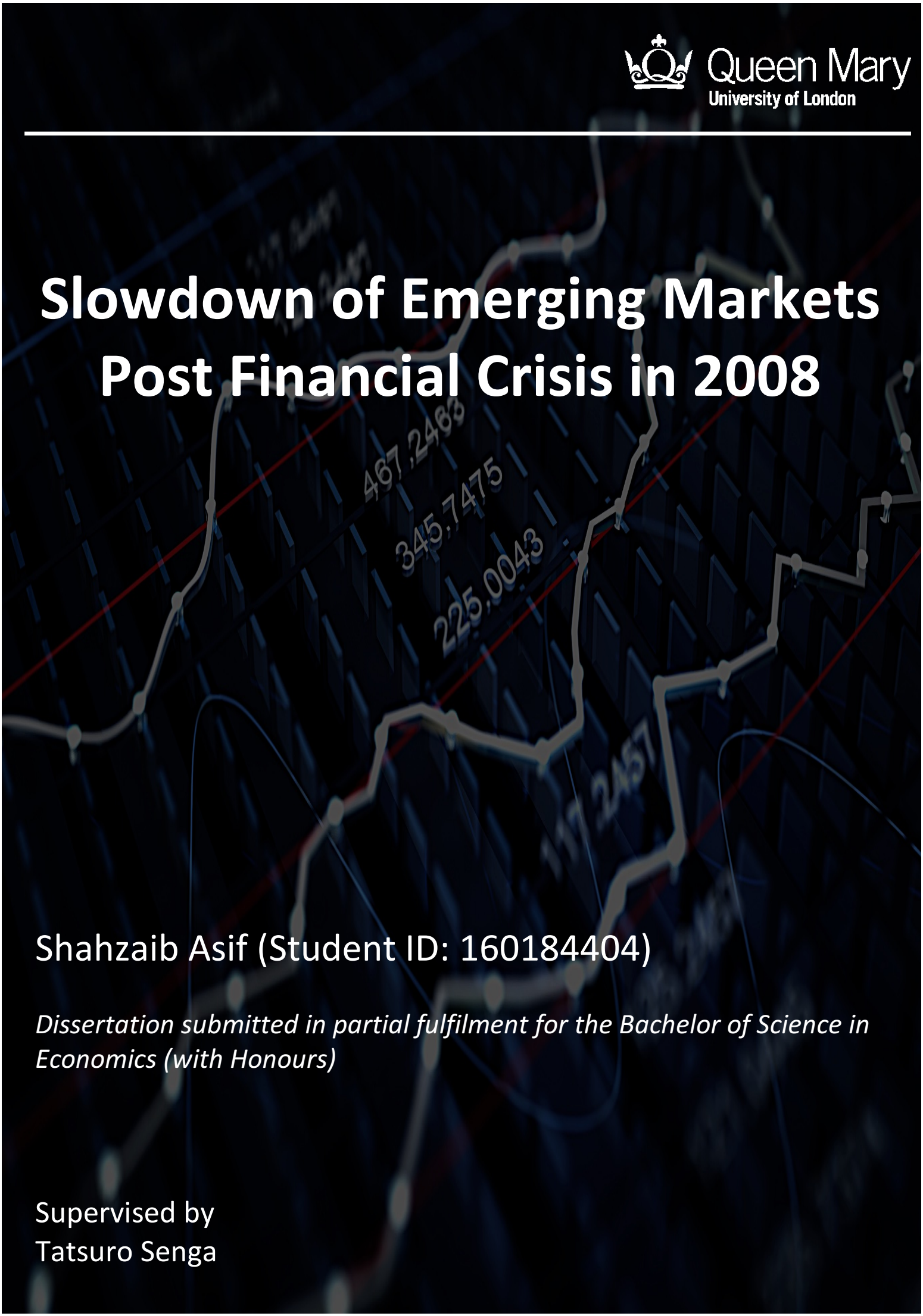

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Slowdown of Emerging Markets Post Financial Crisis in 2008

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Dissertation submitted in partial fulfilment for the Bachelor of Science in Economics (with Honours)

Supervised by
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Abstract

Despite the "golden era" of economic growth experienced before the financial crisis, consistent negative growth rates hinted a slowdown in the emerging market region. Sluggish growth after the financial crisis has been a widely studied topic by various researchers but none of them have been successful in explaining the root causes behind it. This paper aims to test the slowdown of emerging market economies after the financial crisis along with finding the factors which have led to the poor growth. I have included data from the biggest emerging and advanced economies (9 countries each) to analyse the difference in their economic growth rates after the financial crisis. I find that there is a slowdown in emerging market economies after the financial crisis. Furthermore, this slowdown was due to higher economic uncertainty, lower population growth and higher unemployment. Additionally, I find that other factors such as regulations could have also impacted the growth level. Although my findings and analysis is consistent with other researchers, I believe that there is further research needed to understand other factors which led to the poor growth. These results can help central banks and governments to design appropriate policies to tackle the issue and regain the pre-crisis growth level.

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"The overall shape they're (emerging markets) in has a lot more cracks now than it did five years ago and certainly at the time of the global financial crisis"
Carmen Reinhart, Director, Centre for International Economics of University of Maryland, May 16th, 2018

"Global conditions are changing in terms of the risk metrics, although we're still enjoying a high level of growth, that growth is plateauing"
Jihad Azour, Director, Middle East and Central Asia, IMF, November 13th, 2018

"Trade conflicts and political uncertainty are adding to the difficulties governments face in ensuring that economic growth remains strong, sustainable and inclusive"
Angel Gurría, Secretary-General, OECD, November 21st, 2018

"The next recession is somewhere over the horizon, and we are less prepared to deal with that than we should be . . . [and] less prepared than in the last [crisis in 2008]"
David Lipton, Deputy Managing Director, IMF, January 6th, 2019

"At the beginning of 2018 the global economy was firing on all cylinders, but it lost speed during the year and the ride could get even bumpier in the year ahead"
Kristalina Georgieva, CEO World Bank, January 9th, 2019

"China's growth will slow further this year due to low investment and poor momentum"
Grace Ng, Senior China Economist, JPMorgan, January 10th, 2019

"The overall macro-economy will be a tad bit slower, but I do think that there are some mitigating factors: Monetary policies are getting looser, I think there are some fiscal stimulus coming down the pipe"
Piyush Gupta, CEO, Singapore's DBS Group Holdings, February 18th, 2019

"There is definitely a slowdown in the momentum of the global economy. I don't think the economy is going to be as strong as it was last year"
Jane Shoemake, Investment Director, Janus Henderson Investors, February 18th, 2019

"Global economy has lost further momentum, the expected rebound in global growth later this year is precarious and vulnerable to uncertainties such as Brexit, global trade tensions, and high levels of debt in some sectors and countries."
Christine Lagarde, Managing Director and Chairman, IMF, April 2nd, 2019

1. Introduction

Emerging markets (EM's) have been a victim of sluggish growth over the past decade. Growth in these countries have been markedly slower than the long-term average. EM's growth has plummeted from 7.2% in 2007 to 2.9% in 2017, which raises the question: Is this just a rough patch or a prolonged weakness? This slowdown has affected all regions and many big EM's such as BRICS (Brazil, Russia, India, China and South Africa) have had experienced three consecutive years of slower growth by 2015. The EM-AE growth differential has narrowed after the financial crisis to 1.7 percentage points, well below the long-term average (1998-2008) of 2.5 percentage points.

EM's experienced a *"golden era"* of rapid economic growth, low policy uncertainty and unemployment before entering this phase of stagnation. Especially in the early 2000's, EM's had record-high growth rates with average growth rate of 5.6% (2000-2007), much higher than 2.5% (2000-2007) of advanced economies. Their pre-crisis development was due to immense integration in international trade and finance. Growth was driven by high sums of Foreign Direct Investment (FDI) in infrastructure and technology. Low operating costs encouraged multinational firms to shift their primary services to countries like India and China. These have been one of the key factors which boosted growth in emerging market countries before the financial crisis.

Emerging markets recovered quicker than advanced economies after the financial crisis but they could never hit their pre-crisis growth rates. There has been a massive downturn in the growth rate of emerging markets after the financial crisis. Factors such as trade and FDI which were the prime reasons of the flourish growth witnessed by emerging markets were the architects of their downfall after the crisis. Reduction in global demand and political instability between China and US both resulted in a drop in trade levels. Increasing costs and higher inflation forced businesses to relocate their production to other countries. There are a few other key factors which have had a huge impact such as uncertainty, lower population growth, higher unemployment rate and introduction of regulations. The graph (Figure A) below displays this slowdown in EM's after 2008 and the increase in fluctuation and volatility in the GDP growth rate.

There are three main questions discussed in this paper: Did emerging markets slow down after the financial crisis? Did economic uncertainty, population growth and unemployment play a role in this slowdown? Were emerging markets growing faster than advanced economies? Literature by other economists does not answer all the questions above therefore I designed a regression model which aims to provide adequate evidence to suggest that emerging markets have slowed down after the financial crisis in 2008.

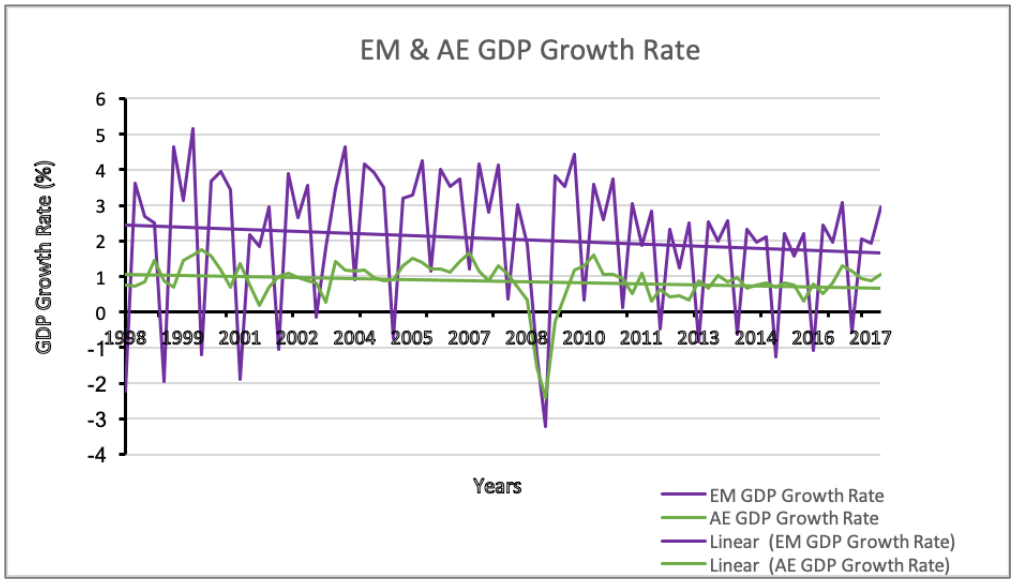


Figure A: Source - Data used from World Bank and individual central banks and includes all countries from my data sample mentioned below

2. Literature Review of the Slowdown in Emerging Market's

Economic indicators have repeatedly suggested a slowdown in Emerging Markets after the financial crisis in 2008. Despite recovering faster than other advanced economies and rebounding back in 2010, EM's have still been unable to average the pre-crisis growth rates. In light of the growing importance of emerging markets before the crisis, continuous sluggish growth can have a huge impact on the fragile global economy.

Stagnation in the larger emerging markets such as the BRICS (Brazil, Russia, India, China, and South Africa) and MINT (Mexico, Indonesia, Nigeria, Turkey) have played a huge contribution in the slowdown of the whole EM region. High levels of worldwide policy uncertainty, low global trade volumes and regulatory reforms have all added to the frustration leading to the poor economic growth. This led to an intense debate about the policy implications and the duration of the EM slowdown.

2.1. BRICS contribution to the Emerging Market economic downturn

It has been over a decade since Jim O'Neill coined the famous acronym "*BRICS*" consisting of Brazil, Russia, India, China and South Africa. The acronym was introduced in the "*Global Economics Paper No:66*" published by Goldman Sachs (O'Neill, 2001). It started to being commonly used after the launch of the paper "*BRICs and Beyond*" (O'Neill, 2007). BRICS accounted for two-thirds of emerging market GDP in 2010 which explains their dominance in the EM region (Didier, Kose, Ohnsorge, and Sandy Ye. 2016). They are expected to account for 33 percent of world GDP by 2020 (Fioramonti, 2014). Their rising importance in the world economy has been a threat to other advanced economies. Stagnation in these countries can have a huge impact on the growth prospects of other emerging markets and developing economies. BRICS have experienced three continuous years of slower growth until 2015 driving down the performance of the whole EM region (Didier, Kose, Ohnsorge, and Sandy Ye. 2016). Their GDP growth rate has dropped from 7% (2000-2008) to 4.4% (2009-2017) (World Economic Output, 2018).

2.1.1. Poor growth in Brazil leading to the issues faced by EM's: Brazil has been experiencing poor GDP growth since the financial crisis in 2008. Their pre-crisis average growth rate dropped from 3.8% (2000-2008) to 1.2% (2009-2017) (Brazil: Economic and Monetary Outlook, 2018). This has been due to a sharp decline in domestic demand, rather than a fall in exports or even external financial conditions (Serrano and Summa, 2015). Brazil's economy had room to expand after 2010 but the governments deliberate policy decisions such as increase in interest rates after 2010 resulted in the drop in Brazil's growth rate (Segura-Ubiergo, 2012).

Brazil was one of the only two BRIC countries to have a trade deficit in 2013. (Fioramonti, 2014). Their trade deficits further narrowed by -32.2% in transport, -38.5% in travel and -20.5% in telecommunications in 2015 (Brazil: Economic Survey of Latin America and the Caribbean, 2016). Increase in trade deficit during this period was due to the slower global market activity and reduction in demand for Brazilian exports such as crude oil. Brazilian average exports of goods and services dropped from 5.2% (2004-2010) to 1.6% (2011-2014) which contributed to a drop in the Brazilian GDP growth rate (Serrano and Summa, 2015).

More than 90% of Brazilian oil production came from Petrobras in 2014, who operate as a monopoly in the market (Rocha, Costa Nogueira, 2015). Oil is one of Brazil's main exports (14%), therefore periods of low global oil prices after the financial crisis has had a huge impact on Brazil's economy (Workman, 2019). This slowdown in Brazil's economy has led to a drop in the BRICS average GDP growth rate resulting in slower growth within the whole EM region.

2.1.2. Russia's contribution to the EM slowdown: Russia's GDP growth rate has taken a huge hit since the financial crisis declining from 6.9% (2000-2008) to 0.7% (2009-2017) (Stamer, 2019). They were expected to maintain an average annual GDP growth rate of 4.3% between 2006-2015 (O'Neill, 2007). They were one of the fastest growing economies in the world and were affected the most as compared to other G-20 countries (Guriev and Tsyvinski 2010). They were considered as one of the strongest emerging market economies due to their spare resources, population and geographical location.

So where did it all go wrong for Russia? They experienced high levels of stagnation in their economy after the financial crisis due to three main reasons; worsening structural problems, *"sanctions war"* between Russia and the West, dramatic decrease in oil prices in the second half of 2014 (Eberhardt and Menkiszak, 2015). Russia witnessed a huge impact of the low worldwide aggregate demand and political instability on their exports of goods and services as the growth rate dropped from 7.6% (2000-2008) to 1.6% (2009-2013) due to rising prices and high trade barriers (Kudrin and Gurvich, 2014).

Poor policy decisions, investment in inefficient projects, excessive security and high levels of corruption have all been a main source of Russia's downfall (Movchan, 2017). Growth in gross fixed capital formation is expected to slow down further due to increase uncertainty which can dampen FDI and reduce the access to technology following the latest announcement on sanctions (World Bank, 2018).

Slowdown in Russia can have a huge influence on other emerging markets especially the Commonwealth of Independent States (CIS). Foreign Direct Investment from Russia exceeds 2% of GDP in many CIS countries. Many CIS and Baltic countries such as Belarus, Lithuania, and Turkmenistan have the largest exposure with exports to Russia exceeding 10 percent of their GDP (Stepanyan, Roitman, Minasyan, Ostojic and P. Epstein, 2015).

2.1.3. Economic setback in India drives down the whole EM region: Since 2003, India has been one of the world's fastest growing economies with immense growth potential due to their high productivity growth, Foreign Direct Investment (FDI) and availability of resources. They are one of the only countries to have a speedy recovery after the financial crisis. Their average annual growth rate increased from 6.7% (2000-2008) to 7.4% (2009-2017) (Basu, 2018). They were expected to grow at 10% every year after 2010 (O'Neill, 2007). Their GDP growth rate fell from 9.5% (2009-2011) to 4.5% in the second quarter of 2013 (Anand and Tulin, 2014).

India's export markets almost collapsed following the crisis, merchandise exports shrunk by 17% in 2009, services exports fell by 5.9% and there was high levels of uncertainty and loss of confidence in the economy (Kumar and Vashisht, 2011). Slowdown in exports explain a decline in the GDP growth rate of the Indian economy (Mishra, 2011).

High levels of inflation in the Indian economy has been a key driver in maintaining low growth rates. Average growth is higher for those periods when inflation is below 5.5% and it is lower when inflation is greater than 3% (Mohaddes, and Raissi, 2014). This is in line with most of the other studies testing the effect of inflation rate on the Indian economy such as studies undertaken by (Mohanty et al. (2011) and Ahluwalia (2011)).

The global financial crisis resulted in a withdrawal of capital from the Indian financial markets in 2008 which resulted in extreme volatility in terms of fluctuations in stock market prices, exchange rates and inflation levels. This forced the reversal of policy to deal with the emergent situations (Bajpai, 2010). India is a huge contributor to the whole EM region and therefore a decline in their growth prospects is driving down the whole group of emerging markets.

2.1.4. Reversal in China's economic growth has affected EM's: China started to play a more active role in the world economy following their economic reform in 1978. They quadrupled their GDP between 1980-1997 and again between 2000-2017 making them the second biggest economy in the world (Garnaut, Song and Cai, 2018). Therefore, a slowdown in China's economy has a massive impact on the rest of the world. China's GDP averaged 9.7% between 2008-2010, however the rate of GDP slowed for next six consecutive years reducing from 10.6% in 2010 to 6.7% in 2016 (Morrison, 2014). The 6.6% increase in GDP in 2018 was the lowest since 1990, along with three consecutive years of slower growth (Wildau and Feng, 2019). China's GDP is expected to slow further in the next few years, hitting 5.7% in 2022 (IMF's World Economic Outlook, 2017).

China's low labour costs have been a key instrument in driving their economy and making them one of the fastest growing countries in the world (Fioramonti, 2014). Since 2007, many studies have suggested an end to China's rapid export growth due to

an increase in wages and appreciation of the yen. The yen appreciated by 18% within 5 years of the announcement of China moving away from its dollar peg in July 2005 (Ceglowski and Golub, 2007). Increasing labour costs and tariffs has forced companies to move their operations away from China, which has had a huge impact on their GDP growth rate in the past couple of years.

Chine-US "*Trade war*" has been a significant reason behind the slowdown of the Chinese economy. Chinese GDP loss is forecasted to increase to 1.2% when the US targets broader set of Chinese retailers and products (Bollen and Rojas-Romagosa, 2018). *"Trade war"* between these two countries has resulted in increased tariffs and other barriers which in-return increased the level of uncertainty in the Chinese economy. Businesses have shifted their operations to other countries due to this fear of rising costs in the future (Li, He and Lin, 2018). This has also impacted the level of investment: has hit the economy hard, since china's GDP highly relies on the private sector and Foreign Direct Investment (FDI) (Yifu Lin, Morgan and Wan, 2018).

Slowdown in China's economy and its spill over effects on other countries has been studied by many economists such as Ahuja and Nabar (2012) .and Duval et al. (2014). Any stagnation within the Chinese economy will not only affect EM's but will have a negative impact on the overall global growth.

2.1.5. Massive decline in South Africa's economy has affected EM's: South Africa joined the group of BRIC countries in late 2010. Their inclusion into the BRIC group caught some by surprise. They were added to this group because of their position in Sub-Saharan Africa. South Africa is the largest economy in this region with about one third of the region's GDP (Etropoulos, 2015). Real GDP growth has taken a downturn from 3% in 2011 to only 0.3% in 2016 and according to IMF, country's growth potential has also reduced from 4% in 2007 to 1.5% in 2017 (Faure, 2017)

South Africa's growth prospects look very uncertain in the near future due to external factors such as China's stabilising growth, increase in commodity prices and reduction in investment (Fioramonti, 2014). Since 2011, slower growth in China has had a direct impact on South Africa's economy in terms of lower exports while a reduction in iron ore prices made the matters worse (Faure, 2017). Global financial crisis has had a huge

effect on the mining sector in South Africa. Commodity booms have increased the prices of minerals worldwide which have resulted in lower revenues for most companies in South Africa, forcing some of them out of business (Bexter, 2009). South Africa is ranked within the top 20 economies in the world, therefore any stagnation within their economy will have an impact on the whole EM region.

2.2. Slowdown in advanced economies has affected EM's

The global financial crisis had two types of effects 1) Direct impact on the financial sector and 2) Indirect effect on economic activities. Emerging markets were affected by the latter due to minimum exposure of their banks to subprime-lending. This is the reason behind EM's recovery from the financial crisis is quicker than other advanced economies (Didier, Kose, Ohnsorge, and Sandy Ye. 2016). Advanced economies play a vital role in the growth prospects of emerging markets due to their high volume of trade, investment and political actions (such as *sanction*s). Average growth of world imports has almost halved to 3.5% (2011-2016) as compared to the pre-crisis growth rate (H. Powell, 2016).

United States (US), the most advanced economy in the world had only averaged a GDP growth rate of about 2% (2009-2016), well below their former trends (Williams, 2017). Slowdown in United States affects every single emerging market in the world because of their high levels of integration in world trade in each sector. US dollar is the most common currency used as a base for trading oil around the world therefore any fluctuations in the US economy hits the entire market (Obadi and Othmanova, 2012). Chinese exports to the US constitutes 5% of Chinese GDP and slowdown in the US will reduce China's GDP growth by 0.5% (Lau, 2001). GDP per capita in US will reduce further from 2% per year (1891-2007) to 0.9% (2007-2032) per year because of demographics, education, inequality and government debt (Gordon, 2014). Reduction in the Total Factor Productivity (TFP) of the United States will have a huge impact on EM's, given their strong high-technology sectors (Cardarelli and Lusinyan, 2015).

2.3. Uncertainty playing a key role in the EM slowdown:

The idea about uncertainty was firstly introduced by *John Maynard Keynes and Frank Knight* (1921) and later enriched at the Keynes, Knowledge and Uncertainty conference in 1993 (Shelia C, 2002). It refers to the lack of clarity about future economic activity. The probability of the economic activity occurring and their outcome is unknown (Knight 1921; Cagliarini and Heath 2000). Uncertainty has a negative correlation with consumption, increase in uncertainty leads to a reduction in consumption and an increase in precautionary savings (Masayuki, 2017). Countries are affected by either income uncertainty (Guiso et al., 1992; Bertola et al., 2005; Feigenbaum and Li, 2015) or uncertainty over macroeconomic variables such as GDP and inflation (Loayza et al., 2000; Mody et al., 2012; Bachmann et al., 2015). Uncertainty shocks have a large real impact on output (GDP) and unemployment over the following years after an economic event (Bloom, 2009). Uncertainty has been the most common reason for the weak global recovery after the financial crisis. Especially for advanced economies such as United States (FOMC 2009), European Union (Balta, Valdés Fernández and Ruscher 2013) and Australia (Kent 2014).

Uncertainty after the financial crisis has had a significant effect on the Gross Domestic Product of the US economy (Baker et al. 2016), the Euro area (Colombo 2013) and other high-income small open economies (Stockhammar and Osterholm 2016). Positive uncertainty shocks generate a persistent drop in the real GDP and a severe decline in stock prices (S. Miescu, 2018). A global uncertainty shock leads to three significant effects for emerging markets; 1) a medium drop in investment, four times as large as found in advanced countries, 2) average recovery time is much longer as compared to advanced countries, 3) strong drop in private consumption relative to advanced countries (Carrière-Swallow and Céspedes, 2013). There are also contradictory views to suggest that policy uncertainty does not have much impact on the output of most emerging market economies (Choi and Shim, 2018).

2.4. Regulatory reforms resulting in the EM slowdown

Regulatory reforms after the global financial crisis in 2008 has affected the growth prospects of EM's. Implementation of Basel III increased costs and reduced the availability of liquidity and credit in financial markets in EM's (Financial Stability Board, 2012). Increase in capital requirements has made cross-border banking flows to emerging markets much weaker and more volatile as compared to the pre-crisis period due to the increased costs and availability of

funding for banks in advanced countries (Abdel-Baki, 2012). Basel III and other regulatory reforms have therefore reduced the growth prospects of EM's. There is a contradictory view which suggests that business reforms have a positive impact on the average GDP growth (Haidar, 2012).

2.5. Is there still hope for EM's to revive their pre-crisis growth?

Emerging markets are on the road to revival, they now make up over 60% of the total global economic output, and 70% of global GDP growth (UBS, 2018). Recovery of oil prices in 2018 has hinted signs of growth for most of the oil exporting countries such as Brazil. Increase in development plans between countries such as the China-Pakistan Economic corridor (CPEC) is expected to boost GDP growth rates in both countries and the whole of the EM region on average (Husain, 2018). There is huge scope for development and recovery due to an increase in optimism and international trade. Growth rate in emerging markets reached 6.8% in 2017 according to the Institute for International Finance due to a massive increase in industrial production and trade (Hammarlund, 2018). EM's are expected to have continuous growth in the future driven by high demand by consumers as a result of stabilising prices.

3. Data

3.1. *Overview*

This aim of this paper is to test the slowdown of emerging markets after the financial crisis using various economic indicators such as GDP growth rate, Economic Policy Uncertainty (EPU) index, population growth rate and unemployment rate. Data used in the paper is obtained from various different sources; such as World Bank, Federal Reserve Economic Data (FRED) and individual central banks. I have included equal number of emerging markets (EM) and advanced economies (AE) in my analysis to reduce the probability of bias in my final output. I have used 9 emerging markets (*United States, Canada, United Kingdom, Australia, Germany, France, Japan, Sweden and Netherlands*) and 9 advanced economies (*Brazil, Russia, India, China, Mexico, Colombia, Greece, Singapore and Chile*) as part of the sample for my analysis. Economic Policy Uncertainty index is the main indicator used to explain how economic uncertainty has played a vital role in the slowdown of emerging markets after the financial crisis in 2008.

3.2. Emerging Markets (EM) & Advanced Economies (AE)

An emerging market economy is one, which is in the phase of becoming an advanced economy in the future. This can be classified based on their socio-economic factors and the development plans down the pipeline for the future. I have referred to numerous emerging markets from different sources such as Morgan Stanley Capital International (MSCI), IMF, S&P and Dow Jones before choosing the countries for my sample. Figure 1 shows all the countries that I have included in my sample. These emerging market economies are expected to be the next world leaders in terms of economic growth, development, trade and innovation.

Brazil is ranked as the eight largest economy in the world based on their GDP but they are still considered an emerging economy due to their phase of transformation from an emerging market to an advanced economy. It has been included in the EM group due to their high export levels of oil in recent years and increase in Foreign Direct Investment (FDI) in the Brazilian economy. Russia is considered as an emerging market because of their increased investment in technology and innovation. They have opened their doors and increased their exports to other countries especially oil which reflects a positive future for the Russian economy. High investment in India's economy in recent years has enabled them to attract many businesses and

compete in a complete new market shifting away from production of primary goods to providing services. This recent transition and brighter plans ahead makes India one of the fastest growing emerging markets in the world. Some argue that China is no longer an EM after becoming the second largest economy in the world. I believe that there is still room for progress for China due to their convincing plans for the future such as the China-Pakistan Economic Corridor (CEPEC). Immense economic growth in the past two decades and a speedy recovery after the financial crisis suggests that China can still be considered as an emerging market economy.

Other countries in our analysis have various distinctive features due to which they have been included in the emerging market group. Mexico is the second largest economy in Latin America. Their recent progress in the automotive industry has pushed them to become the 13th largest economy in the world. They are now the fourth largest auto exporter and thus a very promising emerging market. Colombia is included in my sample due to their stable political and economic activity along with rise in oil exports and higher prices playing in their favour. High interest rates have made Colombia an ideal destination for investors which has had a positive impact on their economic progress. Greece is included as an emerging market after being downgraded following the Greek Debt Crisis in 2010. They have been recovering well after the economic setback and have lower unemployment and higher GDP growth rate which is why I have decided to include them in my analysis. Singapore is classified differently by all the sources. They are considered as an advanced economy by some while some still think they are an emerging market economy. I have included them as an emerging market economy due to their progress in the services sector in the past two decades. I believe they still have room for progress which is reflected by their high consecutive growth rates each year. The last emerging market included in my analysis is Chile. Chile has one of the best economic and policy environments amongst other emerging markets and their central bank's proactive role will help them sustain high growth levels around 3.4% in 2019 as suggested by IMF.

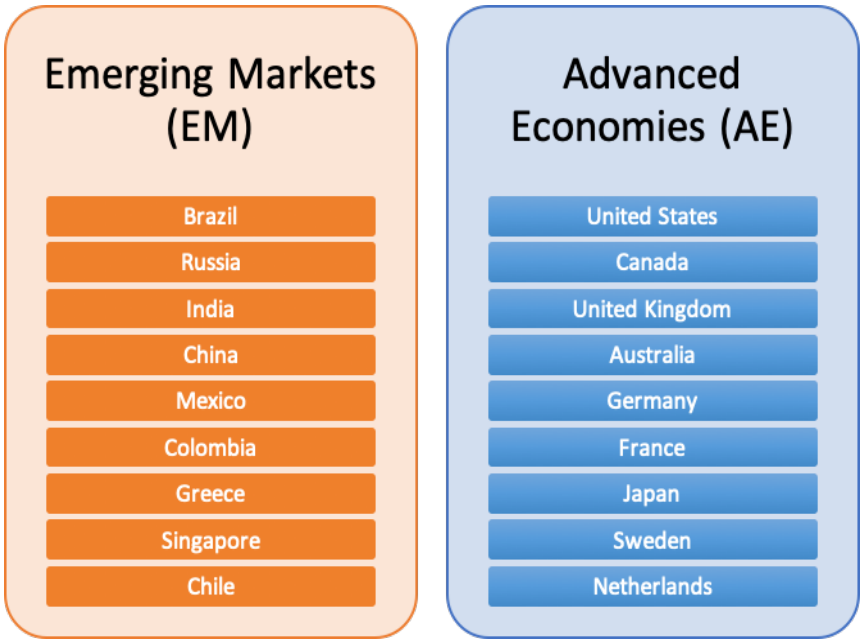
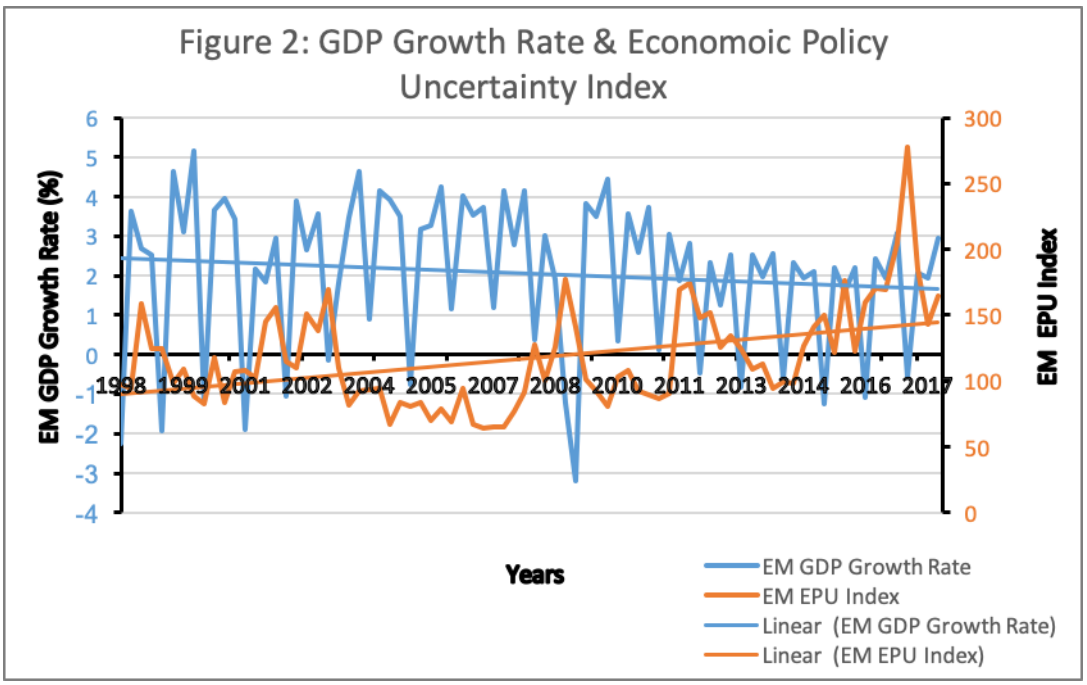


Figure 1: Countries included in the sample

3.3. Economic Policy Uncertainty Index (EPU)

Economic Policy Uncertainty index is arguably the most accurate measure of global economic uncertainty. Uncertainty has been one of the main factors which resulted in the steep decline in economic growth post financial crisis as suggested by the Federal Open Market Committee (2009) and the International Monetary Fund (IMF) (2012, 2013). I have decided to use EPU index as the main independent variable in my model. EPU index is built using three key underlying components; 1) policy-related economic uncertainty coverage in different newspapers, 2) number of tax code provisions set to expire in future years, 3) disagreement among economic forecasters about policy relevant variables (Bakera, Bloom and Davisc, 2013). The first component is comprised of the 10 largest newspapers such as the New York Times, Wall Street Journal and others which are used to construct a normalised index based on the number of news articles reflecting economic uncertainty. The second component is based on the projections of the tax code in the future based on the level of uncertainty in the economy. The final component is derived from individual's predictions about future Consumer Price Index (CPI) and total expenditures which is used to construct an index measuring policy-related uncertainty.

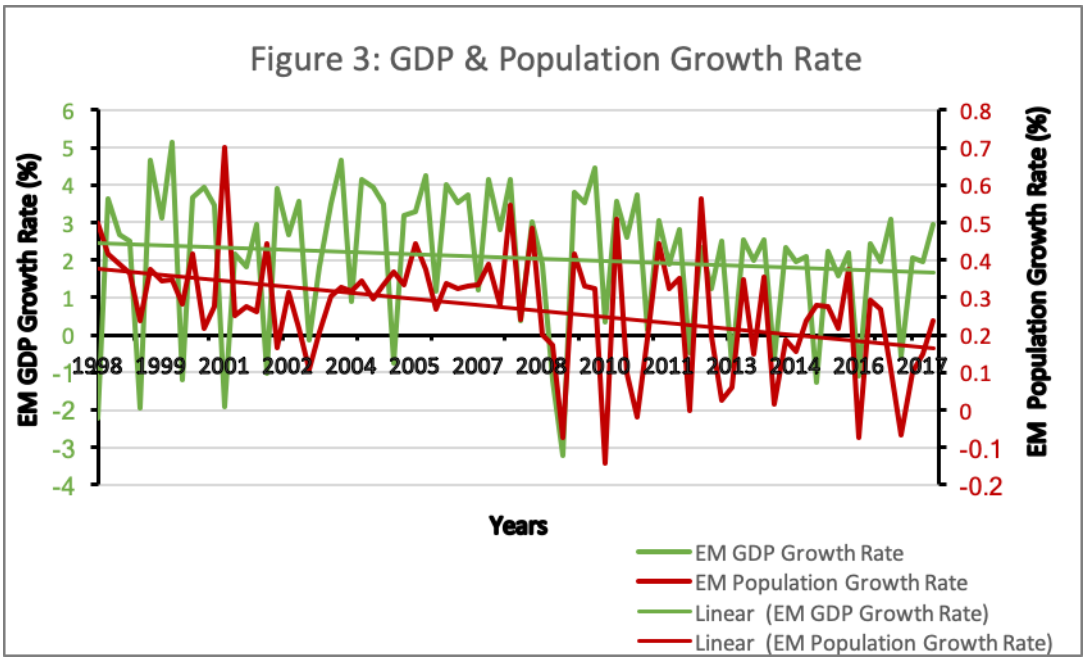
There have been high fluctuations in the level of uncertainty after the financial crisis due to a series of different events which help to explain the slowdown in global growth. Stagnation in global growth after the crisis is a result of many factors and not just the aftermath effects of the financial crisis. Figure 2 illustrates the negative correlation between GDP growth rate and the Economic Policy Uncertainty index. This result for emerging markets (EM) from our sample provides a glimpse of the bigger picture. The graph shows the increase in the EPU index between the period 1998-2017 resulting to a drop in the level of GDP growth rate. The gap between the trend lines of both the indicators has reduced after 2008 which shows the growing importance of uncertainty in explaining the economic downturn. Financial crisis in 2008 is reflected by a steep decline in the GDP growth rate to almost -3% and an increase in the EPU index to almost 200. Other global events affecting economic growth after the crisis have stopped countries from regaining their pre-crisis position. European Sovereign Debt Crisis between 2010-2012 increased the uncertainty level around the world leading to slower progress. Emerging markets and advanced economies saw some hope with low uncertainty levels and convincing economic growth during the period 2012-2016 before the crash of the oil market in 2016. Sudden drop in oil prices after 2016 had a huge impact on some emerging markets since oil is their main source of income. This is also reflected in the graph below suggesting that the long lasting effects of the financial crisis along with global economic events have slowed down growth in advanced economies and especially emerging markets.



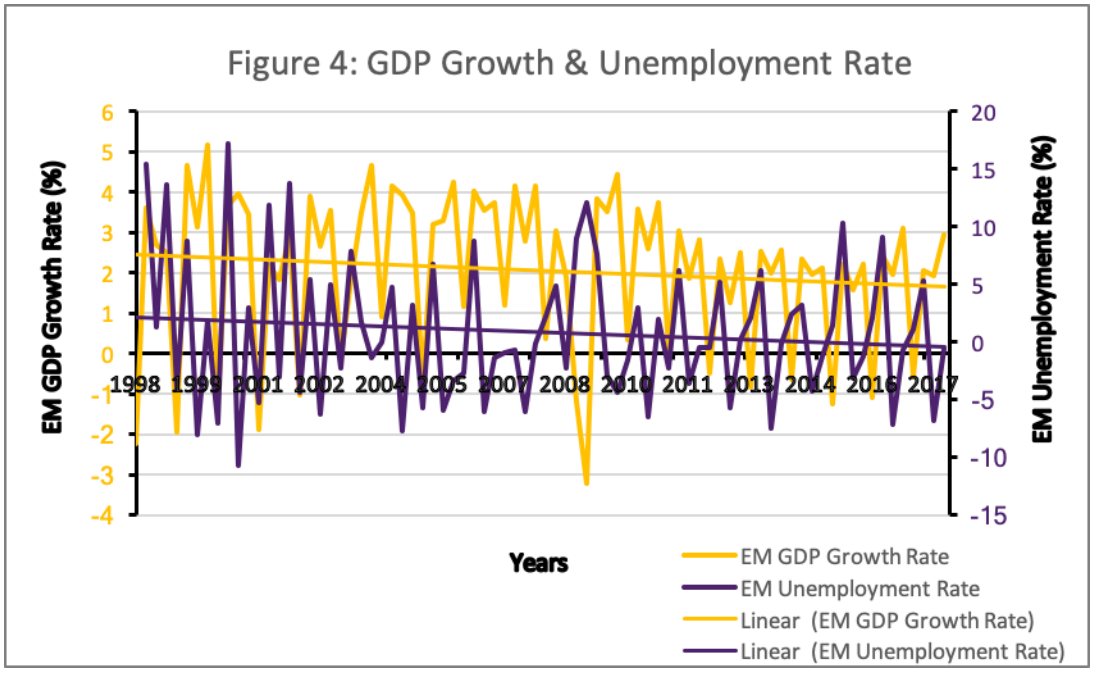
3.4. Population Growth & Unemployment Rate

There are a few other factors apart from economic uncertainty, which have led to the slowdown of emerging markets after the financial crisis. I have included population growth and unemployment rate in my model to explain their contribution to the sluggish growth. Effect of population growth on GDP growth rate is a controversial topic with disagreement amongst authors. Some suggest that GDP growth rate in high income countries is slower due to the low levels of population growth (Heady & Hodge, 2009). Whilst others contradict this theory proving a negative relationship between population growth and GDP growth rate. They believe that there are a finite number of available resources and capacity in an economy and increase in population growth is problematic and leads to a lower long-term economic growth (Linden, 2017). I believe that population growth leads to a higher level of GDP growth in emerging markets. This is due to the growing and developing nature of these countries and the spare capacity on offer. I have included this variable in my analysis to show this relationship and correlation.

Figure 3 shows the trend between population and GDP growth for the chosen emerging market countries over the past two decades. The figure illustrates a positive relationship between the two variables showing a drop in population growth leading to a relatively similar drop in GDP. Emerging markets have seen a drop in their population growth rate due to many reasons such as better education, lower infant mortality rates and the one child policy in China. This drop has seen a reduction in the GDP growth rate due to the less exploitation of spare resources in the economy. We can see a missive drop in the population growth rate to almost -0.1% during the financial crisis in 2008 due to reductions in household income and increase in uncertainty in the economy which increased the cost of having an additional household during the current period. There is a bigger gap between the trend lines after 2008 which refers to the contribution of other factors apart from population growth that explain the economic slowdown.



Unemployment is always seen as a consequence of lower economic growth. The relationship between these two economic indicators is a widely researched topic around the world. Most authors agree with consensus, that unemployment and GDP follow a negative correlation. This relationship is studied in many different locations such as Poland and Spain (Podgórska and leśniowska-gontarz, 2016), South Africa (Makaringe and Khobai, 2018) and Arab countries (Abdul-Khaliq and Soufan, 2014) and all of them follow the same conclusion. I have included unemployment rate in my model to help explain its role in the emerging market slowdown. Figure 4 contradicts with the theory of negative correlation showing that unemployment actually follows a positive correlation in the chosen emerging market countries during the period 1998-2017. I will be testing and discussing the effect unemployment has had on the GDP growth rate after the financial crisis in 2008 in more detail.



4. Methodology

The aim of my paper is to be able to find enough evidence to suggest that emerging markets have slowed down after the financial crisis in 2008. In addition to this, I want to explain the reason behind the slowdown using some explanatory variables. I ran a regression with GDP growth rate as my dependent variable since it is the best measure of economic growth. I will be using economic policy uncertainty index (EPU), population growth rate and unemployment rate as independent variables to explain the reason behind the sluggish down. I have used quarterly data in my analysis to increase the durability of my model and reduce the possibility of error. Putting together all the variables, I have the following regression functions.

Regression (1)

$$GDP\ growth\ rate\ (\mathcal{Y}_t) = \beta EPU_t + c$$

This function is testing the impact of the economic policy uncertainty index on the GDP growth rate. I ran this regression to show the relationship between economic uncertainty and the GDP growth rate and its contribution to the economic slowdown before and after the financial crisis. The independent variables are explained as:

- $\boldsymbol{EPU_t}$ refers to the economic policy uncertainty index of all the 18 countries included in my sample. This will be our main variable of interest and how this has contributed to the slowdown. The coefficient of EPU (β) measures the quarterly percentage (%) change in the $GDP\ growth\ rate\ (\mathcal{Y}_t)$ to a unit increase in EPU.
- $\boldsymbol{c}$ is the constant term of the regression function

Regression (2)

$$GDP\ growth\ rate\ (\mathcal{Y}_t) = \beta EPU_t\ +\ \delta Population_t\ +\ \sigma Unemployment_t\ +\ c$$

Where:

- $\boldsymbol{EPU_t}$ is defined as in regression (1) above
- $\boldsymbol{Population_t}$ refers to the population growth rate of all the included countries in my sample. This explanatory variable is included to explain the relationship between population growth and economic growth. δ measures the impact of a percentage (%) increase in the population growth rate on the quarterly percentage (%) change $GDP\ growth\ rate\ (\mathcal{Y}_t)$.
- $\boldsymbol{Unemployment_t}$ is the level of unemployment rate in the 18 cross-sectional countries. σ is defined as the percentage (%) change in the $GDP\ growth\ rate\ (\mathcal{Y}_t)$ to a percentage (%) change in unemployment.
- $\boldsymbol{c}$ is defined as in regression (1) above

Two further variables are added to our model to help explain the cause of the sluggish emerging market growth. We run this regression twice, once with data from before the financial crisis ($t \leq 2008$) and once with data from after the financial crisis ($t > 2008$) to show the difference in the impact of the explanatory variables. These two regressions are focused on explaining the causes of the slowdown. The next two regression functions will expand on the first two and include variables to show the economic downturn after the financial crisis.

Regression (3)

$$GDP\ growth\ rate\ (Y_t) = \beta EPU_t + \delta Population_t + \sigma Unemployment_t + \pi Emerging_t + \alpha Post_t + c$$

We have added a few more regressors to our model in hopes of answering all the questions asked earlier in this paper. The explanatory variables are defined as:

- $\boldsymbol{EPU_t}$ is defined as in regression (1) above
- $\boldsymbol{Population_t}$ is defined as in regression (2) above
- $\boldsymbol{Unemployment_t}$ is defined as in regression (2) above
- $\boldsymbol{Emerging_t}$ is a binary variable which equals one if the included country is an emerging market economy (and is 0 otherwise). The coefficient of $Emerging_t$ (π) will determine whether GDP growth rate has increased, reduced, stayed the same for an emerging market economy as compared to an advanced economy.
- $\boldsymbol{Post_t}$ is a binary variable which equals one if we only focus on data from after the financial crisis ($t > 2008$) (and is 0 otherwise). The coefficient of $Post_t$ (α) decide whether GDP growth rate has increased, reduced or stayed the same after the financial crisis in 2008.
- $\boldsymbol{c}$ is defined as in regression (1) above

Regression (4)

$$GDP\ growth\ rate\ (Y_t) = \beta EPU_t + \delta Population_t + \sigma Unemployment_t + \pi Emerging_t + \alpha Post_t + \mu Emerging_t Post_t + c$$

This is the final regression function which completes our model, this will illustrate the economic slowdown of emerging markets after 2008 along with explaining the reasons behind it. We have added an interaction term to our previous function to broaden the model and provide enough evidence to get suitable results. The explanatory variables are defined as:

- $\boldsymbol{EPU_t}$ is defined as in regression (1) above
- $\boldsymbol{Population_t}$ is defined as in regression (2) above
- $\boldsymbol{Unemployment_t}$ is defined as in regression (2) above
- $\boldsymbol{Emerging_t}$ is defined as in regression (3) above
- $\boldsymbol{Post_t}$ is defined as in regression (3) above
- $\boldsymbol{\mu Emerging_t Post_t}$ is defined as an interaction term where the effect of one independent variable depends on the state of the other independent variable. In this function, it refers to the effect on the GDP growth rate of a country being an emerging market and focusing on data after the financial crisis.
- $\boldsymbol{c}$ is defined as in regression (1) above

5. *Results*

I obtained the regression results below after running the regression on E-views using panel data with 18 cross-sections, representing all the emerging markets and advanced economies from my sample. The data is ranged quarterly from 1998 until 2017. Each result below represents one of the regression functions outlined earlier in my model. I have opted for a linear-linear model since most of my variables were in percentage terms. The results obtained below will be answering the following questions asked earlier in this paper: Did emerging markets slow down after the financial crisis? What were the causes of the slowdown? Are emerging markets really growing quicker than advanced economies?

Null hypothesis: **H_0: p=0.05**
Alternative hypothesis: **H_1: p<0.05**

We accept the results below if they are significant at the 5% significance level. If the results are significant than we reject the null hypothesis (H_0) and accept the alternative hypothesis (H_1) which means that we have enough evidence to suggest that emerging markets have slowed down after the financial crisis and the explanatory variables are all correlated with economic growth and have played a role in this slowdown.

Table (1) shows the estimated results of regression function (2) from before the financial crisis. These results explain the factors behind the GDP growth rate in emerging markets and advanced economies during the period ***1998-2008***. I ran the regression with both EM and AE countries so the results can explain the relationship between EPU, population growth and unemployment rate with the GDP growth rate. The results show a negative relationship between EPU which measures economic uncertainty and GDP growth rate. This means that an increase in the EPU index before the crisis would reduce the global GDP growth rate. Negative coefficient for the EPU index ($\beta = -0.0069$) implies that a unit increase in the EPU index before the crisis would reduce the GDP growth rate by 0.007%. Adding additional regressors in our function further increases the negative relationship between EPU and GDP growth rate. Population growth rate had a positive impact on the GDP growth rate ($\delta > 0$). A percentage (%) increase in the population growth rate would increase the GDP growth rate by 0.57% ($\delta = 0.5722$). Our regression result demonstrates a positive relationship between the unemployment rate ($\sigma > 0$) and the GDP growth rate during this period. This means that a

percentage (%) increase in the unemployment rate increases GDP growth rate by 0.053%. This result contradicts with our expected result, which is further discussed in the next section of the paper. All our results are significant at the 5% significance level and therefore we have enough evidence to suggest that economic uncertainty, population growth and unemployment can be used to explain the movements in the GDP growth rate before the financial crisis. Our adjusted R^2 has increased from 0.0631 to 0.1161 after adding some explanatory variables. This means that adding the independent variables improves our model more than we expected.

Table 1: *Factors contributing to the EM & AE slowdown before the Financial Crisis (1998Q1-2008Q4)*

Dep. Var.	(1) *GDP Growth Rate*	(2) *GDP Growth Rate*
Economic Policy Uncertainty Index (EPU)	-0.0069 (6.6241)***	-0.0098 (7.0721)***
Population Growth Rate		0.5722 (3.4747)***
Unemployment Rate		0.0527 (2.3134)*
Constant	1.3511 (12.1683)***	1.1796 (6.0914)***
adj. R^2	0.0631	0.1161
Observations	637	492

t statistics in parentheses
***p<0.05, **p<0.01, ***p<0.001**

Table (2) below displays the regression output of regression function (2) from after the financial crisis. This result includes both EM and AE countries and it is ranged from ***2009-2017***. The idea behind running similar regressions before and after the crisis is to compare the different impact of economic uncertainty, population growth and unemployment on global economic growth.

Coefficient of economic policy uncertainty index (β) has reduced from -0.0069 (before crisis) to -0.0018 (after crisis). This illustrates that economic uncertainty had a lower impact on GDP growth rate after the crisis than it did before. Adding two additional independent variables in the model has reduced the coefficient of EPU since other variables can be used to explain the change in GDP growth rate. The coefficient of population growth rate (δ) has also dropped from 0.5722 (before crisis) to 0.3932 (after crisis). Which means that population growth now has a smaller impact on global GDP than it did before the crisis. Unemployment is the only regressor which now has a stronger relationship with GDP growth. The result still contradicts with our expected result of a negative relationship between unemployment and GDP growth rate. We accept all of the above results since they are significant at the 5% level and the higher adjusted R^2 suggests that adding additional variables has improved the model more than we expected.

Table 2: *Factors contributing to the EM & AE slowdown after the Financial Crisis (2009Q1-2017Q4)*

Dep. Var.	(1) *GDP Growth Rate*	(2) *GDP Growth Rate*
Economic Policy Uncertainty Index (EPU)	-0.0018 (3.2885)**	-0.0016 (2.5989)**
Population Growth Rate		0.3932 (3.2111)**
Unemployment Rate		0.0554 (5.0412)***
Constant	0.7776 (8.2207)***	1.0831 (8.6135)***
adj. R^2	0.0153	0.0713
Observations	634	600

t statistics in parentheses
***p<0.05, **p<0.01, ***p<0.001**

Table (3) shows results for regression function (3). I ran this regression for both emerging markets and advanced economies and it covers all the periods from ***1998-2017***. The results reflect the relationship between EPU, population growth and unemployment with the GDP growth rate. It shows how important these factors have been in explaining the effects on the GDP growth rate over the past two decades. Economic uncertainty has a negative correlation with GDP ($\beta < 0$). This means that a unit increase in the EPU index led to a reduction in the level of GDP growth rate by 0.0029% in emerging markets and advanced economies. This effect was reduced to 0.0025% after we added other regressors to our function. We can accept these results since they are significant at the 5% level. Population growth rate again has a positive correlation with GDP ($\delta > 0$). Reduction in the population growth rate by 1% led to a decrease in the GDP growth rate by 0.4809% in EM and AE. This effect was reduced to 0.4364% after we included some other independent variables in our model. Adding additional variables has improved our model as shown by the higher adjusted R^2. Unemployment has a negative impact ($\sigma < 0$) on GDP as we anticipated before. A percentage (%) increase in unemployment in EM and AE led to a drop in GDP by 0.0353%. Impact of a change in the unemployment rate on GDP was further reduced to 0.0426% after adding additional explanatory variables. Adding two binary variables *emerging* and *post* has improved our regression model. The coefficient of the first binary variable *emerging* (π) explains the difference in the GDP growth rate due to a country being an emerging or an advanced economy. An emerging economy has a higher GDP growth rate by 0.2731% as compared to an advanced economy. The coefficient of the second binary variable *post* (α) refers to the difference in the GDP growth rate of all EM and AE countries after ($t > 2008$) and before ($t \leq 2008$) the financial crisis. The result shows that all EM and AE countries were growing by 0.0444% less after the financial crisis as compared to before. We cannot accept this result since it is not significant at the 5% significance level. This will be further discussed in the next section of this paper.

Table 3: *Emerging Market and Advanced Economy slowdown from before and after the crisis*
(1998Q1-2017Q4)

Dep. Var.	(1) *GDP Growth Rate*	(2) *GDP Growth Rate*	(3) *GDP Growth Rate*
Economic Policy Uncertainty Index (EPU)	-0.0029 (6.4450)***	-0.0029 (5.4827)***	-0.0025 (4.3598)***
Population Growth Rate		0.4809 (4.8164)***	0.4364 (4.3422)***
Unemployment Rate		-0.0353 (3.4826)***	-0.0426 (4.1391)***
Emerging			0.2731 (3.5496)***
Post			-0.0444 (0.5590)
Constant	0.9523 (14.7441)***	1.1208 (11.1624)***	1.0395 (9.9831)***
adj. R^2	0.0309	0.0620	0.0711
Observations	1271	1092	1092

t statistics in parentheses
***p<0.05, ****p<0.01, *****p<0.001**

Lastly, table (4) shows the results of our complete model. These results will conclude our analysis of whether emerging markets have slowed down after the financial crisis or not. Data used to produce these results include all the emerging markets and advanced economies from our data sample and these results include all the data from 1998 until 2017. We can conclude that economic uncertainty has a negative impact on GDP growth rate. A unit increase in the EPU index will reduce the quarterly GDP growth rate by 0.0028%. Similarly, population growth rate is positively correlated with economic growth. A percentage (%) increase in population will increase the quarterly GDP growth rate by 0.4276%. Finally, a percentage (%) increase in the unemployment rate leads to a drop in the quarterly GDP growth rate by 0.0430%. All of the results above are statistically significant at the 5% significance level and therefore we can reject the null hypothesis and accept the alternative hypothesis that uncertainty, population growth rate and unemployment are all factors which impact economic growth. We did not produce any results for our two dummy variables (*emerging, post*) due to the dummy variable trap because of multicollinearity after adding an interaction term.

We included an interaction term in our final model to test the interaction between our dummy variables. This will help us answer the main question in the paper and provide enough evidence to suggest that emerging markets have slowed down after the financial crisis in 2008. Based on the results obtained below, emerging markets on average were growing at 0.4450% quarterly (EM=1, Post=0) before the financial crisis. This quarterly growth rate was reduced to 0.2280% (EM=1, Post=1) after the crisis. Both these results are statistically significant and therefore we have enough evidence to reject our null hypothesis and conclude that emerging markets have in fact slowed down after the financial crisis in 2008. We can see the adjusted R^2 increasing throughout our model below which suggests that adding additional explanatory variables has improved our model as a whole.

Table 4: *Emerging Market and Advanced Economy slowdown from before and after the crisis (1998Q1-2017Q4)*

Dep. Var.	(1) *GDP Growth Rate*	(2) *GDP Growth Rate*	(3) *GDP Growth Rate*	(4) *GDP Growth Rate*
Economic Policy Uncertainty Index (EPU)	-0.0029	-0.0029	-0.0025	-0.0028
	(6.4450)***	(5.4827)***	(4.3598)***	(4.6604)***
Population Growth Rate		0.4809	0.4364	0.4276
		(4.8164)***	(4.3422)***	(4.2562)***
Unemployment Rate		-0.0353	-0.0426	-0.0430
		(3.4826)***	(4.1391)***	(4.1789)***
Emerging			0.2731	
			(3.5496)***	
Post			-0.0444	
			(0.5590)	
𝟙(Emerging Market) x 𝟙(t>2008)				0.2280
				(2.2343)*
𝟙(Emerging Market) x 𝟘(t≤2008)				0.4449
				(3.9230)***
Constant	0.9523	1.1208	1.0395	0.9993
	(14.7441)***	(11.1624)***	(9.9831)***	(9.4489)***
adj. R^2	0.0309	0.0620	0.0711	0.0738
Observations	1271	1092	1092	1092

t statistics in parentheses
***p<0.05, **p<0.01, ***p<0.001**

I will be concluding all my findings in the next section of the paper along with discussing the limitations to my research and suggesting areas of further research and improvement. I will also mention some policies, which can be used to overcome this sluggish growth in emerging markets.

6. Discussion

This paper presents new evidence to suggest that there has been a slowdown in the growth rate of emerging markets after the financial crisis. We also tested the relationship of economic growth with uncertainty, population growth and unemployment. These factors can be used to explain the sluggish growth in the EM region.

In our final model, we found a negative correlation between economic uncertainty and economic growth. This was our main explanatory variable in our analysis which coincides with other literature such as the relationship between uncertainty and slow EM growth suggested by the Federal Open Market Committee (2009) and the International Monetary Fund (IMF) (2012, 2013). Economic uncertainty refers to the state when consumers are uncertain about the future. This level of uncertainty can occur in many forms such as concerns about future employment, income or just general price level in the economy. There was a massive increase in the level of unemployment after the crisis which led to a drop in disposable household income. These were the main factors which increased the amount of uncertainty worldwide. High levels of inflation in emerging markets contributed to the concerns faced by consumers. As a consequence, consumers saved more for the future and the level in spending dropped. Uncertainty reduced the level of investment in the economy due to poor returns and governments also reduced their spending on infrastructure and other services due to an increase in the spending of providing unemployment allowances. All these factors combined reduced the (C, I, G) components that measure GDP (GDP= C+I+G+(X-M)). This is the reason behind uncertainty playing a vital role in the reduction of economic growth rate in emerging markets and advanced economies.

Similarly, population growth and GDP growth are both positively correlated. This result is in line with other literature (Heady & Hodge, 2009). More people in the economy will result in higher levels of consumption and there will be less spare capacity and more use of resources. Reduction in the population growth rate in the past two decades has contributed to the slower growth. After the financial crisis, households were less likely to increase the size of their family due to higher uncertainty of future income. Therefore, this led to reduction in the population growth rate and thus lower economic growth.

Our results suggest that unemployment and economic growth are negatively correlated. Unemployment and GDP can have a two-way relationship. We are interested in the impact of the unemployment rate on the GDP growth rate. Increase in the unemployment rate leading to a drop in economic growth is consistent with other similar literature (Makaringe and Khobai, 2018). Higher unemployment leads to a drop in the disposable household income which causes uncertainty for the future and therefore consumers start saving more and reduce consumption which has a negative impact on growth. This is why higher unemployment after the financial crisis has reduced the GDP growth rate and caused economic stagnation in emerging markets. Exports contribute a lot to economic growth in emerging markets. Lower demand for goods after the crisis in advanced economies and political instability between China and US has reduced the level of exports. This has led to an increase in the level of unemployment in emerging markets which has resulted in poor growth.

The high coefficient for constant (c) suggests that there are other factors which have reduced the GDP growth rate in emerging markets and advanced economies. Introduction of regulations can be seen as a factor that could have reduced economic growth. Regulations such as Basel III, Dodd-Frank have increased capital requirement for banks which has restricted the amount of lending to consumers. This reduction in lending can be a cause of the slowdown in investment. This has also made the cross-border banking flows to emerging markets weaker due to the increased costs faced by banks in advanced economies.

There are certain limitations to my analysis which have slightly affected my results. The positive coefficient of unemployment in the first two regression results is not what we expected. This is because the regression output suggests that advanced economies have actually improved their economic growth rate after the crisis *(appendix: 10)*. Therefore, an increase in unemployment suggests an increase in the GDP growth rate. This is also why the coefficient of our second dummy variable *Post* in our regression (3) result is not significant. Since the coefficient would have suggested if EM and AE have slowed down after the crisis which is incorrect since advanced economies did now slow down. This overall result was improved after we added more regressors, which made our model more accurate. This is because there was more data used in the final regression function. Our model can be improved further if we include some additional regressors such as regulations to test their relationship with economic growth. Our model results were affected by some missing data in our sample which can be seen by looking at the low number of observations above. Some countries do not have quarterly

data available for some years between 1998-2017. This model can be improved if we have data for all our countries and if we compare results of EPU index, population growth and unemployment rate separately for emerging markets without including the advanced economies data in our ample.

My research can be used further to find the root causes of the economic slowdown. This can help central banks and governments design appropriate policies to combat the issue and regain the pre-crisis growth rate. Countries around the world have finally started to hit their pre-crisis GDP growth rates after an era of slow and sluggish growth. A few successful policies implemented by some countries include quantitative easing, negative interest rates and managing consumer expectations. The common issue faced by most emerging markets has been lack of consumption and investment which has kept the GDP growth levels very low. Quantitative easing can be a good monetary policy tool to encourage spending. This is when the government purchases securities in order to reduce the interest rate and increase money supply. Electronically injecting money in the economy will encourage consumers to spend more which will increase consumption and thus the GDP growth rate. Some countries like Sweden, Japan have opted for an unconventional policy tool in hopes of recovering from the financial crisis. They have used negative interest rates to boost consumption and investment. Negative interest rate means that the consumer will now need to pay the bank to deposit their money. This policy has discouraged consumers to save which has resulted in higher consumption. It also has a positive impact on investment since borrowers will now be paying a lower interest rate.

Negative interest rate policy (NIRP) has proven to be a successful policy tool in regaining Japan, Switzerland, Euro Zone's pre-crisis position. I believe that this policy can help solve all the issues caused by the financial crisis. Consumers will be discouraged to save due to low interest rates offered which leads to higher consumption in the economy. Low cost of borrowing will increase the demand for loans and thus increase the level of investment. This policy will reverse the effects caused by economic uncertainty. Implementing NIRP will cause an outflow of hot money because of low returns of keeping money in domestic banks. This will result in a depreciation of the local currency and improve the trade balance (if the Marshall Lerner condition holds). Higher consumption will increase the demand for domestic and international goods and services which will lead to a drop in unemployment in the economy. A better trade balance implies increase in exports which is good for emerging

market countries and this will help reduce the unemployment rates in the EM region. Lower unemployment will enable the governments to reduce spending on unemployment allocations and spend it on other services. This unconventional monetary policy will increase consumption, investment, government spending and improve the trade balance which will all contribute to a higher GDP growth rate (GDP= C+I+G+(X-M)). Therefore, I believe this policy tool will be the perfect solution in stimulating the global economic growth rate.

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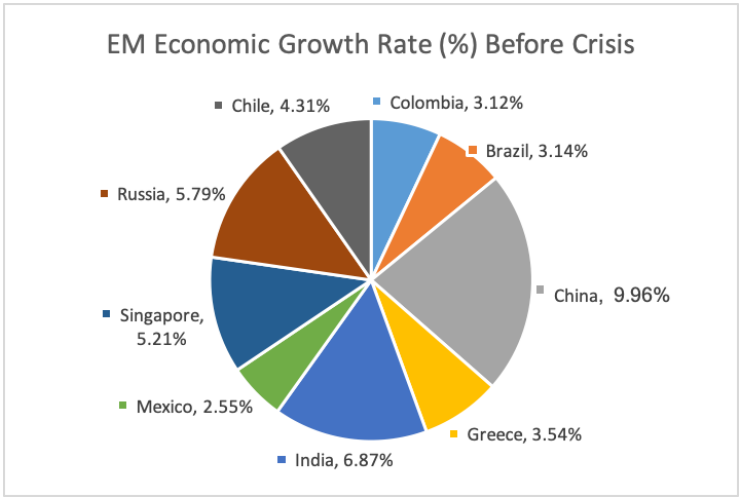
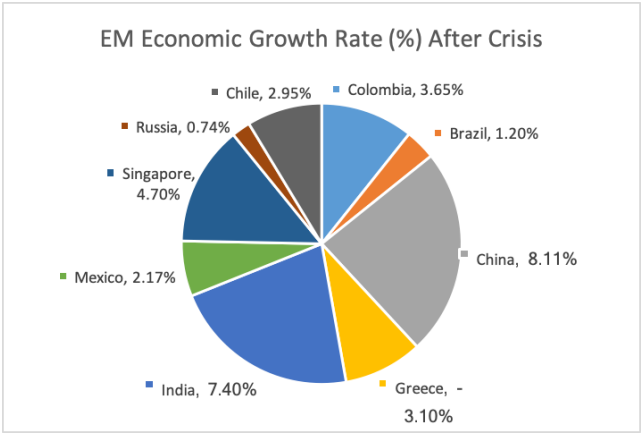
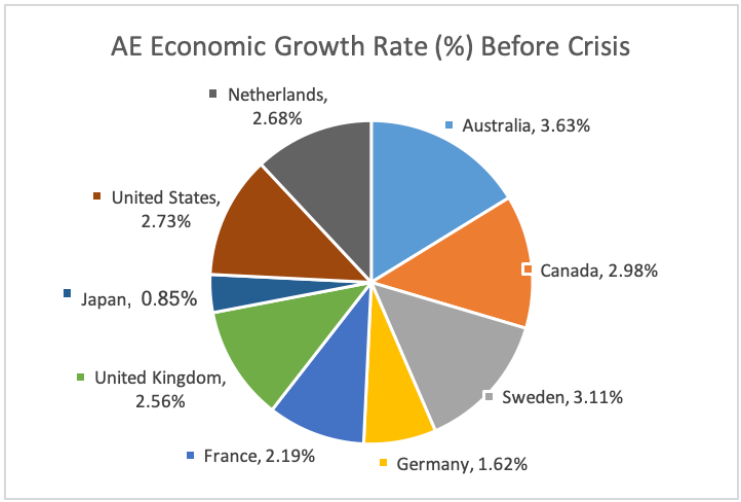
8. *Appendix*

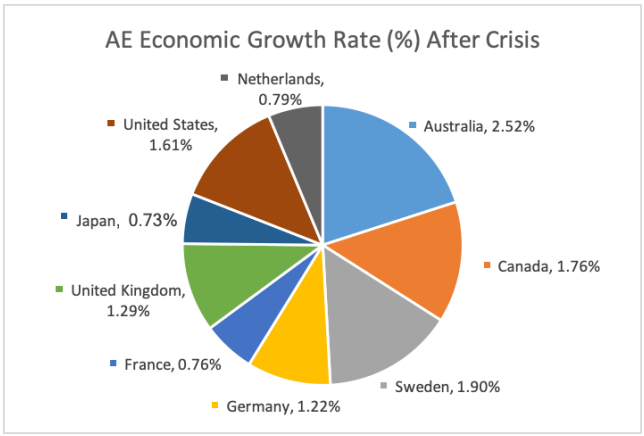
1. *The pie chart below shows the GDP growth rates of emerging markets before and after the financial crisis. We can see a huge drop in the growth levels for all countries apart from India and Colombia.*





2. *The pie chart below shows the GDP growth rates of advanced economies before and after the financial crisis. We can see a huge drop in the growth levels for all countries.*





3. *E-views regression output for* ***Table (1):*** *Factors contributing to the EM & AE slowdown before the Financial Crisis (1998Q1-2008Q4)*

Dependent Variable: GDP_GROWTH_RATE
Method: Panel Least Squares
Date: 04/08/19 Time: 15:51
Sample: 1998Q1 2008Q4
Periods included: 44
Cross-sections included: 17
Total panel (unbalanced) observations: 637

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.351156	0.111039	12.16833	0.0000
ECONOMIC_UNCERTAIN	-0.006990	0.001055	-6.624167	0.0000

R-squared	0.064635	Mean dependent var	0.679803
Adjusted R-squared	0.063162	S.D. dependent var	1.182928
S.E. of regression	1.144960	Akaike info criterion	3.111752
Sum squared resid	832.4433	Schwarz criterion	3.125745
Log likelihood	-989.0930	Hannan-Quinn criter.	3.117184
F-statistic	43.87959	Durbin-Watson stat	1.494770
Prob(F-statistic)	0.000000		

This regression output shows the negative correlation between economic uncertainty and GDP growth rate before the financial crisis

4. *E-views regression output for* ***Table (1):*** *Factors contributing to the EM & AE slowdown before the Financial Crisis (1998Q1-2008Q4)*

Dependent Variable: GDP_GROWTH_RATE
Method: Panel Least Squares
Date: 04/08/19 Time: 15:54
Sample: 1998Q1 2008Q4
Periods included: 44
Cross-sections included: 17
Total panel (unbalanced) observations: 492

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.179627	0.193653	6.091445	0.0000
ECONOMIC_UNCERTAIN	-0.009812	0.001387	-7.072106	0.0000
POPULATION_GROWTH	0.572288	0.164698	3.474775	0.0006
UNEMPLOYMENT_RATE	0.052772	0.022811	2.313469	0.0211

R-squared	0.116122	Mean dependent var	0.738912
Adjusted R-squared	0.110688	S.D. dependent var	1.276420
S.E. of regression	1.203707	Akaike info criterion	3.216786
Sum squared resid	707.0682	Schwarz criterion	3.250920
Log likelihood	-787.3293	Hannan-Quinn criter.	3.230189
F-statistic	21.37081	Durbin-Watson stat	1.630063
Prob(F-statistic)	0.000000		

This regression output shows the correlations of economic uncertainty, population growth and unemployment rate with GDP growth rate before the financial crisis

5. *E-views regression output for* ***Table (2):*** *Factors contributing to the EM & AE slowdown after the Financial Crisis (2009Q1-2017Q4)*

Dependent Variable: GDP_GROWTH_RATE
Method: Panel Least Squares
Date: 04/08/19 Time: 15:53
Sample: 2009Q1 2017Q4
Periods included: 36
Cross-sections included: 18
Total panel (unbalanced) observations: 634

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.777594	0.094589	8.220771	0.0000
ECONOMIC_UNCERTAIN	-0.001817	0.000553	-3.288510	0.0011

R-squared	0.016823	Mean dependent var	0.507377
Adjusted R-squared	0.015268	S.D. dependent var	1.188822
S.E. of regression	1.179712	Akaike info criterion	3.171568
Sum squared resid	879.5676	Schwarz criterion	3.185612
Log likelihood	-1003.387	Hannan-Quinn criter.	3.177021
F-statistic	10.81430	Durbin-Watson stat	1.345930
Prob(F-statistic)	0.001063		

This regression output shows the negative correlation between economic uncertainty and GDP growth rate after the financial crisis

6. *E-views regression output for* ***Table (2):*** *Factors contributing to the EM & AE slowdown after the Financial Crisis (2009Q1-2017Q4)*

Dependent Variable: GDP_GROWTH_RATE
Method: Panel Least Squares
Date: 04/08/19 Time: 15:55
Sample: 2009Q1 2017Q4
Periods included: 36
Cross-sections included: 18
Total panel (unbalanced) observations: 600

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.083111	0.125745	8.613515	0.0000
ECONOMIC_UNCERTAIN	-0.001588	0.000611	-2.598917	0.0096
POPULATION_GROWTH	0.393223	0.122459	3.211064	0.0014
UNEMPLOYMENT_RATE	-0.055445	0.010998	-5.041247	0.0000

R-squared	0.075902	Mean dependent var	0.535936
Adjusted R-squared	0.071250	S.D. dependent var	1.212949
S.E. of regression	1.168939	Akaike info criterion	3.156714
Sum squared resid	814.3853	Schwarz criterion	3.186027
Log likelihood	-943.0143	Hannan-Quinn criter.	3.168125
F-statistic	16.31774	Durbin-Watson stat	1.475057
Prob(F-statistic)	0.000000		

This regression output shows the correlations of economic uncertainty, population growth and unemployment rate with GDP growth rate after the financial crisis

7. *E-views regression output* ***Table (3) and (4****): Emerging Market and Advanced Economy slowdown from before and after the crisis (1998Q1-2017Q4)*

Dependent Variable: GDP_GROWTH_RATE
Method: Panel Least Squares
Date: 04/08/19 Time: 15:57
Sample: 1998Q1 2017Q4
Periods included: 80
Cross-sections included: 18
Total panel (unbalanced) observations: 1271

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.952348	0.064591	14.74418	0.0000
ECONOMIC_UNCERTAIN	-0.002932	0.000455	-6.445022	0.0000

R-squared	0.031696	Mean dependent var	0.593794
Adjusted R-squared	0.030933	S.D. dependent var	1.188538
S.E. of regression	1.170012	Akaike info criterion	3.153477
Sum squared resid	1737.169	Schwarz criterion	3.161577
Log likelihood	-2002.034	Hannan-Quinn criter.	3.156519
F-statistic	41.53830	Durbin-Watson stat	1.418949
Prob(F-statistic)	0.000000		

This regression output shows the negative correlation between economic uncertainty and GDP growth rate from 1998-2017

8. *E-views regression output* ***Table (3) and (4****): Emerging Market and Advanced Economy slowdown from before and after the crisis (1998Q1-2017Q4)*

Dependent Variable: GDP_GROWTH_RATE
Method: Panel Least Squares
Date: 04/08/19 Time: 15:56
Sample: 1998Q1 2017Q4
Periods included: 80
Cross-sections included: 18
Total panel (unbalanced) observations: 1092

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.120808	0.100410	11.16236	0.0000
ECONOMIC_UNCERTAIN	-0.002949	0.000538	-5.482674	0.0000
POPULATION_GROWTH	0.480883	0.099844	4.816361	0.0000
UNEMPLOYMENT_RATE	-0.035258	0.010124	-3.482628	0.0005

R-squared	0.064613	Mean dependent var	0.627387
Adjusted R-squared	0.062034	S.D. dependent var	1.245477
S.E. of regression	1.206228	Akaike info criterion	3.216530
Sum squared resid	1583.025	Schwarz criterion	3.234829
Log likelihood	-1752.225	Hannan-Quinn criter.	3.223455
F-statistic	25.05166	Durbin-Watson stat	1.508077
Prob(F-statistic)	0.000000		

This regression output shows the correlations of economic uncertainty, population growth and unemployment rate with GDP growth rate from 1978-2017. This result is used to determine the impact of these factors on economic growth.

9. *E-views regression output* ***Table (3) and (4****): Emerging Market and Advanced Economy slowdown from before and after the crisis (1998Q1-2017Q4)*

Dependent Variable: GDP_GROWTH_RATE
Method: Panel Least Squares
Date: 04/08/19 Time: 15:58
Sample: 1998Q1 2017Q4
Periods included: 80
Cross-sections included: 18
Total panel (unbalanced) observations: 1092

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.039404	0.104117	9.983059	0.0000
ECONOMIC_UNCERTAIN	-0.002539	0.000582	-4.359795	0.0000
POPULATION_GROWTH	0.436445	0.100512	4.342198	0.0000
UNEMPLOYMENT_RATE	-0.042621	0.010297	-4.139078	0.0000
EM	0.273140	0.076950	3.549555	0.0004
POST	-0.044359	0.079349	-0.559031	0.5763

R-squared	0.075342	Mean dependent var	0.627387
Adjusted R-squared	0.071085	S.D. dependent var	1.245477
S.E. of regression	1.200394	Akaike info criterion	3.208656
Sum squared resid	1564.868	Schwarz criterion	3.236106
Log likelihood	-1745.926	Hannan-Quinn criter.	3.219044
F-statistic	17.69769	Durbin-Watson stat	1.518751
Prob(F-statistic)	0.000000		

This regression result is an updated version of the previous regression output. This includes the two dummy variables (emerging markets, post) which determine the difference in the economic growth levels between emerging markets and advanced economies. This result also shows the difference in the economic growth level from before and after the financial crisis.

10. *E-views regression output* ***Table (3) and (4****): Emerging Market and Advanced Economy slowdown from before and after the crisis (1998Q1-2017Q4)*

Dependent Variable: GDP_GROWTH_RATE
Method: Panel Least Squares
Date: 04/08/19 Time: 15:59
Sample: 1998Q1 2017Q4
Periods included: 80
Cross-sections included: 18
Total panel (unbalanced) observations: 1092

Variable	Coefficient	Std. Error	t-Statistic	Prob.
ECONOMIC_UNCERTAIN	-0.002753	0.000591	-4.660448	0.0000
POPULATION_GROWTH	0.427563	0.100455	4.256248	0.0000
UNEMPLOYMENT_RATE	-0.042973	0.010283	-4.178912	0.0000
EM=0 AND POST=0	0.999364	0.105765	9.448940	0.0000
EM=0 AND POST=1	1.093825	0.130848	8.359490	0.0000
EM=1 AND POST=0	1.444255	0.131342	10.99614	0.0000
EM=1 AND POST=1	1.227328	0.125674	9.765977	0.0000

R-squared	0.078942	Mean dependent var	0.627387
Adjusted R-squared	0.073848	S.D. dependent var	1.245477
S.E. of regression	1.198607	Akaike info criterion	3.206587
Sum squared resid	1558.776	Schwarz criterion	3.238612
Log likelihood	-1743.797	Hannan-Quinn criter.	3.218707
Durbin-Watson stat	1.524620		

This regression output expands the interaction term. Note, I have excluded the constant from this result to show the impact of the financial crisis on advanced economies. Advanced economies had a higher economic growth rate after the financial crisis as compared to before ((EM=0, Post=1) > (EM=0, Post=0)).

11. *E-views regression output* ***Table (3) and (4****): Emerging Market and Advanced Economy slowdown from before and after the crisis (1998Q1-2017Q4)*

Dependent Variable: GDP_GROWTH_RATE
Method: Panel Least Squares
Date: 04/08/19 Time: 16:00
Sample: 1998Q1 2017Q4
Periods included: 80
Cross-sections included: 18
Total panel (unbalanced) observations: 1092

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.999364	0.105765	9.448940	0.0000
ECONOMIC_UNCERTAIN	-0.002753	0.000591	-4.660448	0.0000
POPULATION_GROWTH	0.427563	0.100455	4.256248	0.0000
UNEMPLOYMENT_RATE	-0.042973	0.010283	-4.178912	0.0000
EM=0 AND POST=1	0.094461	0.104030	0.908015	0.3641
EM=1 AND POST=0	0.444892	0.113404	3.923056	0.0001
EM=1 AND POST=1	0.227964	0.102030	2.234291	0.0257

R-squared	0.078942	Mean dependent var	0.627387
Adjusted R-squared	0.073848	S.D. dependent var	1.245477
S.E. of regression	1.198607	Akaike info criterion	3.206587
Sum squared resid	1558.776	Schwarz criterion	3.238612
Log likelihood	-1743.797	Hannan-Quinn criter.	3.218707
F-statistic	15.49879	Durbin-Watson stat	1.524620
Prob(F-statistic)	0.000000		

This regression output shows the results of our complete model. These are the results included in regression ***table (4).*** *Note, I have dropped the first regressor to include the constant to avoid multicollinearity. This result shows that emerging markets after the financial crisis were growing at a much slower rate as compared to before ((EM=1, Post=1) < (EM=1, Post=0)).*