Financial Development, Income Inequality and The Role of English Proficiency

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Norhasimah Shaharuddin,[1] Tamat Sarmidi,[1] Abu Hassan Shaari Md Nor[1] & Mohd Hafiz Abdul Wahab[2]

Abstract
The role of English is not only as a language of trade, finance and technology but also become one of the development strategies in 21st century. The motivation of this study is to provide empirical evidence of the relationship between financial development, income gap and English language proficiency. The theory suggests that financial development was seen to reduce the income gap but empirical evidence shows diverse results. Therefore, this study aims to analyze the interaction between financial development and English language proficiency as to test whether the impact of financial development on the income gap is strengthened by the good in English language proficiency on countries or vice versa. This study is based on dynamic panel model with system GMM estimators for 69 countries from 1980-2014. The findings show that the interaction between financial development and English language proficiency is negative and significant. This illustrates that the English language proficiency can stimulate the effect of financial development to reduce the income gap. Meanwhile financial development as well as advances in new knowledge are important factors for economic development. Other factors need to be taken into account to ensure that financial development is beneficial in reducing the imbalance of income distribution.

Keywords
Financial Development; Income Gap; English language proficiency; Dynamic Panel.

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Introduction

Globalization in the 21th century accelerated by the new technology has great impact in using English language as a second language. As we know languages are the heart of business communication and negotiation. Most of businesses dealing around the world are conducting in English. Therefore, the development of human capital through dissemination of new knowledge will be sluggish without a good command of the English language (Sarmidi et al). Otherwise, a nation that lack of finance to enact physical objects and produce knowledge suffers from all gaps (Romer 1990). Hence, a need of well-functioning financial system is sufficient to

[1] Universiti Kebangsaan Malaysia, Selangor, Malaysia.
[2] Universiti Teknologi Mara (UiTM) Shah Alam, Selangor, Malaysia.

Corresponding Author:
Tamat Sarmidi, Universiti Kebangsaan Malaysia, Selangor, Malaysia.
E-mail: tamat@ukm.edu.my

create new economic modernization while the successful international integration supported by national policy and effective international cooperation has underpinned most experiences of shared prosperity and reduced poverty. Theory provides ambiguous predictions for the impact of finance on income distribution Demirguc-Kunt and Livine (2009). As pointed out by De Haan et al. (2016), a distinction can be made between the effects of finance on the extensive and the intensive margin. The extensive margin is about the use of financial services by individuals who had not been using those services for example, financial development may help poor families to do study loan as to pay for education. So, inequality may fall in models with this mechanism (Galor and Moay, 2004).

Otherwise, persistent financial market imperfections have been the key determinants of income inequality (Greenwood and Jovanovic, 1990; Banerjee and Newman, 1993). Means while, financial crisis creates uncertainty and volatility in investment thus slow down the rate of economic growth. These imperfections prevent those on low income from investing in human capital, health and entrepreneurial activities. Hence, Lower rate of economic growth does not help job creation particularly for the poor and thus adversely affect income distribution (Jeaneney and Kpodar 2005; 2006, Shahbaz 2011). Recently, regarding the importance of English proficiency concerning especially for internet access and economic growth. People with low English proficiency may not able to improve their new stock of knowledge globally. Based on the report of EF English Proficiency Index (EF EPI) found that almost every one of the 60 countries with largest ranking of English skills or proficiency was connected with a rise in per capita income. Furthermore, a correlation between English proficiency and human development index also can measure of education, life expectancy, literacy and standards of living (EP EPI, 2013). With evidence in this report, the primary purpose of this study is to investigate the importance of English language in strengthen the role of financial development in facilitating income equality.

In new digital development, one of the most significant outcomes of the progress of information technology is probably electronic commerce over the internet, a new way of conducting business. Already, it affects such large sectors as communications, finance and retail trade and might expand to areas such as education and also support by the skilled to use the technology and also the global language. English is a “global language” and the “lingua Franca of the modern era”. English skills are necessary for any country to fully benefit from global commerce and access the technology. Proficiency in English is a critical component of a successful modern society. English is the most spoken and most widely taught language in the world. Commonly used in over 100 countries (*www.ethnologue.com*), English was spoken by more than 350 million people around the world as their first language and more than 430 million speaking it as a second language.

This paper contributes to the literature in many ways. Firstly, it employs the cross-countries dynamic panel analysis. Secondly, it revisits Law and Tan (2009) which states that financial factor may also form an equalization in income gap especially for those who have talent, ideals and persistence. Therefore, this study is to argue that the proficiency in English language may be one of the factors in achieving a sustainable income equalization. Thirdly, this is further reinforced by a more focused study on the level of competitiveness with financial development as, Hafer (2016) noted that the increase in the level of IQ can have a significant

impact on financial development, and it suggests that financial development is also influenced by various factors.

This study is organized as follows. Section 2 discusses the literature review and section 3 present the model, methodology and data used in the estimation. Section 4 analysed the empirical results and section 5 concludes the whole discussion.

Literature Review

This study takes the hypotheses described in Law and Tan (2009) regarding financial relationships and income inequality which are the *inequality-widening hypothesis* and *inequality-narrowing hypothesis*. It said that *inequality-widening hypothesis* occurs when financial development only benefits the rich and influential groups especially when institutional quality is weakening. According to Rajan and Zingales (2003), a weak institutional environment established interests have privileged access to finance so the financial development induced by captured direct controls is likely to hurt the poor. This can lead to gap of greater income inequality. In the presence of strong institutions, financial development may reduce inequality by allowing the poor to invest in human and physical capital (Law et al, 2014). On the others hand, *inequality-narrowing hypothesis* illustrated the poor which they were able to use financial access especially in obtaining loans when the development of the financial sector is widen. This is directly related to the studies of Banerjee and Newman (1993) and Galor and Joseph (1993) which found that income inequality become diminish as financial markets are well developed. Galor and Moay (2004) stated that more finance may make it easier for poor individuals to borrow for viable projects which may reduce income inequality. Financial imperfections such as information and transaction costs, may be especially binding on the poor who lack collateral and credit histories so that relaxation of these credit constraints may benefit the poor (Beck et al., 2007). Improvements in the formal financial sector could be more likely to benefit the well-off who rely less on informal connections for capital (Greenwood and Jovanovic, 1990).

Previous literature has illustrated that efficiency and development in the financial system can increase capital accumulation and thus ensure continued economic growth (Goldsmith 1969; Mckinnon 1973; King & Livine 1993; Shan 2005). However, the impact of financial development indirectly led to the fact that only the wealthiest people benefited from the access to the financial system resulting in a widespread disparity gap. In addition, the growing capital accumulation also provides an opportunity for increase modern technology that requires more skilled labor. The absence of a developed financial sector will also hurt the poor because it requires cost-effective access to the financial resources (Shahbaz, 2011). Denk and Cournede (2015) conclude that more finance is associated with higher income inequality in the sample of 33 OECD countries. Therefore, we conjecture that financial development should be enjoyed by all groups of nation. This relationship holds when the financial reforms may lead to more equal access to credit by improving the poor from making productive investment for instance in education.

Thus, the advent of the English proficiency in the dissemination of knowledge may speed up the language convergence which has effects on the countries. Keller (2002) finds that the

skills in language proficiency are very important for the dissemination of technology, through the same language communication which facilitates the spread of technology. This suggests that a group of people from different language backgrounds can cooperate and opt to use a common language, the *lingua franca* to communicate with each other (Giles and Philip, 1979).

Hall & Jones (1999) emphasized that the differences in output per worker between countries were explained by language differences. However, it does not mean that every employee must be proficient and competent in English but there is a division between a skilled and non-skilled worker. Therefore, groups with good proficiency in English can indirectly increase the understanding through new knowledge globally. This is directly related to the fact that workers with skills in English are more likely to give a good commitment to the company and are able to improve the performance of the company to the international level. Based on this argument, English proficiency is the necessary skills for an organizational change and has an important impact on management changes especially in countries which not practicing English language (Sachiko & Tomoki, 2015). According to Denk (2015), financial sector employees are very strongly concentrated at the top of the income distribution and their earnings exceed those of employees with similar profiles (such as age, gender or education) in other sectors. This implies that skill and language proficiency also play a role in reducing the income gap in many countries, especially the developing ones.

Data and Methodology

This study used the average data of five years taken from 1980 to 2014 because annual macroeconomic data are noisy, and this applies especially for data on income inequality (Delis et al., 2014) and we are not so much interested in short-term, hence this study taking into a business cycle driven effect. The data used in this study were obtained from the World Development Indicator (WDI), the Standardized World Income Inequality Database (SWIID), the Global Financial Development Database (GFDD). For English language proficiency data is determined using dummy for a country-based on countries that has good English language proficiency based on the English proficiency Index report and country uses English language as official language. The model in this study is based on Law et al (2014) and Ang (2008) studies which relate financial development and income inequality. The countries selected in this study are all the 69 countries which include both of developed and developing countries. However, the selection of the countries (Table A1) has also been tested using the Dfits statistical test to identify outliers whether the selected country is appropriate or vice versa (fig. 1).

The selected variables in this study were based on the previous studies, whereby GINI is an indicator of income inequality (Law et al. (2014) derived from Standardized World Income Inequality Database (SWIID) as a measure of income inequality. The measurement of this index is equivalent to net income imbalances based on household income, Law et al (2014) states that the index SWIID is the best suited for cross-country research. Based on Delis et al. (2014) and Solt (2015), the SWIID database is the most comprehensive database and allows comparison across countries because of it standardized is income. The proxies of financial development variables used domestic credit to the private sector as bank credit is a source of funding, but the banking sector is seen to have a strong influenced on income inequality. This is in line with

previous studies such as Greenwood and Jovanovic (1990) which states that credit to the private sector is a good proxy because the private sector has access to financial intermediaries or access to loans (Banerjee and Newman (1993); Galor and Ziera (1993)). Thus, credit to the private sector is a private credit that represents the level of financial intermediaries, and it is the best measure for financial development (Hafer, 2016). The control variables which includes initial GDP per capita proxy for growth momentum, inflation rate, trade openness and unemployment rate. Growth in GDP, inflation and trade openness have also been used by Ang (2010) and Beck et al (2007).

This study used a dynamic panel approach through the generalized moment method (GMMs) introduced by Holtz-Eakin et.al (1988) and later extended by Arellano and Bond (1991), Arellano and Bover (1995) and Blundell and Bond (1998). This research model was expanded by adding the interaction term between financial development and English proficiency to captures the extent to which English proficiency widening or narrowing the impact of financial development on income inequality. English proficiency can support more inclusive development by expanding the emerging firm network in developing countries. Therefore, this study is conducted as to assess whether the influence of English proficiency can be a contributor to influence financial development. The impact of financial development on income inequality can be seen through the linear logarithm equation:

$$ln\ GINI_{it} = \alpha\ ln\ GINI_{it-1} + \beta_1\ lnFD_{it} + \beta_2\ Dbi_{it} + \beta_3\ ln\ CPI_{it} + \beta_4\ ln\ GDP_{it} + \beta_5\ ln\ UEM_{it} + \beta_6\ ln\ OPNS_{it} + \eta_i + \varepsilon_{it} \quad (1)$$

where is,
Ln GINI= Gini index is based on income
LnFD= Credit to private sector per GDP
Dbi= Dummy English proficiency
Ln CPI= Inflation rate
Ln GDP = GDP per capita
Ln UEM= Unemployment rate
Ln OPNS= Openness to trade [(Export + Import)/GDP]
η_i = Country specific effect
ε_{it} = Error term

The following equation (2) involved the variable of financial development interaction with dummy of English language proficiency:

$$ln\ GINI_{it} = \alpha\ ln\ GINI_{it-1} + \beta_1\ lnFD_{it} + \beta_2\ Dbi_i + \beta_3\ (lnFD_{it} \cdot Dbi_{it}) + \beta_4\ ln\ CPI_{it} + \beta_5\ ln\ GDP_{it} + \beta_6\ ln\ UEM_{it} + \beta_7\ ln\ OPNS_{it} + \eta_i + \varepsilon_{it} \quad (2)$$

This paper used the generalised method of moments (GMMs) panel estimator proposed by Holtz. Eakin et al (1988) and subsequently extended by Arellano and Bond (1991), Arellano and Bover (1995) and Blundell and Bond (1998). There are atleast two reasons for choosing this estimator. Firstly is to control for country specific effect and secondly the estimator control for simultaneity caused by the possibility that some of the explanatory variable may be

endogenous. Arellano and Bond (1991) propose transforming eq(2) into first differences to eliminate country-specific effect as follows:

$$GINI_{i,t} - GINI_{i,t-1} = \alpha(GINI_{i,t-1} - GINI_{i,t-2}) + \beta 1(FD_{i,t} - FD_{i,t-1}) + \beta 2(Dbi_{i,t} - Dbi_{i,t-1}) + \beta 3(X_{i,t} - X_{i,t-1}) + (\varepsilon_{i,t} - \varepsilon_{i,t-1}) \quad (3)$$

To address the possible simultaneity bias of explanatory variable and the correlation between $(GINI_{i,t-1} - GINI_{i,t-2})$ and $(\varepsilon_{i,t} - \varepsilon_{i,t-1})$ Arellano and Bond (1991) proposed that lagged level of the regressor are used as instruments. This is valid under the assumption i) the error term is not serially correlated and ii) the lag of the explanatory variables is weakly exogenous. This strategy is known as difference GMM estimation following Arellano and Bond (1991) and the following moments condition is:

$$E[GINI_{i,t-s}.(\varepsilon_{i,t} - \varepsilon_{i,t-1})] = 0 \quad \text{for} \quad s \geq 2;\ t = 3, ..., T \quad (4)$$
$$E[FD_{i,t-s}.(\varepsilon_{i,t} - \varepsilon_{i,t-1})] = 0 \quad \text{for} \quad s \geq 2;\ t = 3, ..., T \quad (5)$$
$$E[Dbi_{i,t-s}.(\varepsilon_{i,t} - \varepsilon_{i,t-1})] = 0 \quad \text{for} \quad s \geq 2;\ t = 3, ..., T \quad (6)$$
$$E[X_{i,t-s}.(\varepsilon_{i,t} - \varepsilon_{i,t-1})] = 0 \quad \text{for} \quad s \geq 2;\ t = 3, ..., T \quad (7)$$

Although the difference estimator above is able to control the country specific effects and simultaneity bias, it nevertheless has one major shortcoming. Alonso-Borrego and Arellano (1999) and Blundell and Bond (1998) show that when the explanatory variables are persistent the lagged level of the variables become weak instruments. They show that weak instrument may lead to biased parameter estimates in small samples and larger variance asymptotically. Before Arellano and Bover (1995) proposed an alternative system estimator that combines the difference eq (3) and the level eq (2). Blundell and Bond (1998) show that this estimator is able to reduce biases and imprecision associated with difference estimator. Following Arellano and Bover (1995), the additional moment conditions for the second part of the system (the regression in levels) are set as follow:

$$E[(GINI_{i,t-s} - GINI_{i,t-s-1})(\lambda_i - \varepsilon_{i,t})] = 0 \quad \text{for} \quad s = 1 \quad (10)$$
$$E[(FD_{i,t-s} - FD_{i,t-s-1})(\lambda_i - \varepsilon_{i,t})] = 0 \quad \text{for} \quad s = 1 \quad (11)$$
$$E[(Dbi_{i,t-s} - Dbi_{i,t-s-1})(\lambda_i - \varepsilon_{i,t})] = 0 \quad \text{for} \quad s = 1 \quad (12)$$
$$E[(X_{i,t-s} - X_{i,t-s-1})(\lambda_i - \varepsilon_{i,t})] = 0 \quad \text{for} \quad s = 1 \quad (13)$$

The GMM estimators are typically applied in one and two step variants (Arellano and Bond, 1991). The one step estimators use weighting matrices that are independent of estimated parameters whereas the twostep GMM estimator uses the optimal weighting matrices in which the moment conditions are weighted by a consistent estimate of their covariance matrix. This makes the twostep estimator asymptotically more efficient than the one-step estimator.

The consistency of GMM estimator depends on two specification tests which is the Hansen (1982) J-test of over identifying restrictions. Under the null of joint validity of all instruments, the empirical moments have zero expectation, so the J statistic is distributed as X^2 with degrees of freedom equal to the degree of over identification. In terms of the serial

correlation test, one should reject the null of the absence of the first order serial correlation (AR1) and not reject the absence of the second order serial correlation (AR2).

Consequently, this paper uses the moment conditions presented in equation (10)- (13) because system GMM estimator provides an improvement over the first difference GMM estimator when the dependent variable is highly persistent with the autoregressive term close to unity and the number of time period is small. In light of these econometric issues, this paper employs the two-step system GMM.

RESULTS DISCUSSION

Table 1 shows the descriptive analysis in this study. Based on the table lgdp is the highest mean value of 8.981 and standard deviation of all variable illustrate values in the range 0-3 means that a low variation among variables. Table 2 is the correlation matrix between variables used in regression analysis. There was strong relationship between lnGini as a dependent variable and lncpi showed high correlation while lnuem seem to have low correlation to lnGini.

Table 1: Descriptive analysis of each variable

Variables	observation	Mean	Standard Deviation	Minimum	Maximum
lnGini	462	3.5502	0.2729	2.4463	4.1274
lnfd	440	3.7321	0.8522	0.7745	5.3666
Dbi	483	0.4783	0.5000	0	1
lngdp	452	8.9819	1.3329	5.7789	11.551
lncpi	446	2.0169	1.5115	-4.5606	9.0599
lnuem	345	1.9052	0.6089	-1.1394	3.2665
lnopns	451	4.1545	0.6093	2.5683	6.0978

Table 2: Matrix of correlation between variables

Observations	lnGini	lnfd	Dbi	lngdp	lncpi	lnuem	lnopns
lnGini	1						
lnfd	-0.22	1					
Dbi	-0.17	0.10	1				
lngdp	-0.25	-0.56	0.29	1			
lncpi	-0.59	0.51	-0.21	-0.42	1		
lnuem	-0.05	-0.01	-0.06	0.13	0.13	1	
lnopns	-0.22	0.26	0.16	-0.33	-0.19	-0.19	1

The results of this study are divided into two parts, which is model (1) report the estimation result without interaction. While model (2) is a model with interaction between financial development and English proficiency dummy. Table 2 shows the estimation results using the two steps system GMM method. The p value of AR (2) and the Hansen over-identification test for both models are statistically insignificant and exceed the 10% significance

level indicate that all of the models were correctly specified and there was no evidence of autocorrelation or invalid instruments. The estimated coefficient of dependent variable $lnGINI_{t-1}$ for both models are significant at the 1% significance level and the value below 1 indicates that there is a dynamic relationship between financial development and inequality.

The sign of the English language proficiency dummy on the basis model (1) is insignificant but appears to show the reduces of income inequality. In line with Zhang (2012) which says that the English language can be seen as a skill and is an investment in human capital which that leads to economic benefits because it is important in determining income. All control variables that were macroeconomic indicator show inflation and trade openness significant in both models. While unemployment only significant in model 1. This result implies that the increase in level of inflation and trade will affects income inequality. There are different study findings for inflation and unemployment effects on inequality. Rahmah (2002) find that inflation and unemployment rates not significantly affect the GINI level yet Easterly W. and Fischer S. (2001) stated that inflation raises income imbalances because the effects of inflation on the poor are different according to economic condition due to complications of tax system.

The estimated coefficient of trade openness is significant for both models reflecting that an increase in trade openness can reduce income imbalances. This supports Bensidoun et al (2005) which states that most exporting firms use educated workers, which implies that English language is one of effective dissemination in business communication over the world. Meanwhile the impact of financial development on inequality for both models show that increase in financial development does not support the reduction of income inequality. Aghion P. and Bolton P. (1997) point out that more access to credit does not guarantee the reduction in income inequality as it relies on high capital accumulation, which causes economic mobility for the poor to be less rich than the rich. It is also supported by Rajan & Zingales (2003) which claim that only the wealthy are able to offer collateral and more likely to repay the loan, while the poor find it difficult to obtain loans and financial access even though the developed financial markets have worsened income inequality. Law et. al (2014) find that widening inequality occurs if the increase in financial development benefits only the rich but not the poor especially when the institution is weakening.

Furthermore, the results in model (2) illustrates the effect of the interaction between financial development and the English proficiency dummy. The estimated results show that the coefficient of the *Lfd*Dbi* is -0.070. The coefficient of the financial development is positive whereas the interaction term is negative and statistically significant. This result implies that the effect of the financial development can reduce income inequality in the countries that used English language as official language. In other words, the effect of interaction between financial development and English proficiency is seen to support the hypothesis of inequality-narrowing. These findings supported Rahmah (2001) which highlight that other factors can be difficult to measure the effect of income distribution patterns such as economic transformation, globalization as well as liberalization as their changes provide different benefits to the community. This illustrates that the improvement of English language proficiency is significant with increased income (Casale (2011); Chiswick (2013)). According to Arcand (1996), the role of language has influence on economic development through the development of social institutions which also reduce transaction costs and moral hazard problems.

Increasing financial development supported by good English language proficiency, especially the use of internet technology and communication skills can also lead to the good effect of this interaction. English is the language of business, growth and economic prosperity. Therefore, English skills are necessary for any country to fully benefit from global commerce, access the latest technology and innovation and exert influence in the world (CSIS.org). Sachiko and Tomoki (2015) found that employees who have better proficiency in English language are more likely to give a good commitment to the company and able to improve the company's performance internationally.

Table 3: The results of the model (1) and model (2) based on 2-step system GMM method

Dependent variable: lnGini	Model 1	Model 2
	(1)	(2)
$lnGini_{t-1}$	0.603***	0.760***
lnFd	0.001	0.053***
lnFd*bi	-	-0.070***
Dbi	-0.004	0.311***
lncpi	0.023***	0.012***
lngdp	0.002	0.013
lnuem	0.044*	0.005
lnopns	-0.030**	-0.035***
Konstan	1.582***	0.645***
AR(2) (p-value)	0.140	0.243
Hansen test (p-value)	0.449	0.428
Observations	227	227
No of Groups	65	65
No of Instrument	44	56

Conclusion

This study explores the existing of relationship between financial development and income inequality with regard to the impact of English language proficiency as a *lingua franca*. Using a dynamic panel estimation method for 69 countries from 1980-2014, our findings confirm the fact that English language proficiency on financial development has good impact on income distribution. This finding suggest that the effect of financial development can reduce income inequality regarding the countries that used English as an official language. In addition, the impact of financial development on inequality seems to be conditioned by level of financial development and the English proficiency. Thus, the results also proved that English language proficiency is a vital element to improve the standard of living among nations.

Our findings are in contrast to several previous studies that examined the relationship between financial development and income inequality. As explained in previous literature, theory is not clear whether financial development will increase or decrease income inequality. However, our result suggest that financial development can reduce income inequality when

strengthen by other factors. It is important to examine the interaction term to stress that financial development and liberalization are necessarily good to reduce the income inequality.

All of the nations in the countries ought to be exposed to opportunities for better life. Our findings do also support Shahbaz (2011) which stated that easing the access for the poor to financial markets and efficient credit allocation has significant impact on poverty reduction which led to improved income distribution. To the contrary, this study suggest that financial development enhances the access to capital also makes easy for development entrepreneurial skill and allowing them to learn higher and receive quality education particularly in the areas of science and technology which mostly use English language as a second language.

Hence, to achieve a sustainable income growth and reduce poverty, it should be undertaken gradually and carefully especially in technological innovation and proper human capital development in the countries. To sum up, financial sector reform should receive proper attention of policy makers because the allocation of resources will help to increase income distribution. To explain this finding is beyond the scope of the current paper and is left for future research.

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Table A1. A list of countries

Austria	Brazil	Sierra leone
Azerbaijan	El Salvador	Latvia
Belgium	Argentina	Zimbabwe
Chile	Colombia	Ecuador
Denmark	China	South Africa
Estonia	Iran	Guatamela
Finland	Jordan	Egypt
France	Kazakhstan	Indonesia
Germany	Malaysia	India
Greece	Dominica Republic	Cambodia
Hong Kong	Mexico	Philipine
Hungary	Panama	Sri Lanka
Italy	Peru	Vietnam
Jepun	Romania	Ukraine
Korea Selatan	Turkey	Bolivia
Lithuania	Venezuela	Canada
Luxembourg	Rusia	Costa Rica
Netherland	Bulgaria	Croatia
Norway	Sweden	Czech Republic
Singapore	Uraguay	Spain
Thailand	Australia	New Zealand
Nigeria	United Kingdom	United State
Slovenia	Poland	Morocco

Figure 1: Analysis of outliers for the selection of countries using statistics Dfits