Financial Openness and Growth: 2000-2010

Amy Kennedy
Pepperdine University, School of Public Policy, amy.kennedy@pepperdine.edu

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I. INTRODUCTION

In light of the globalized concern to improve world economies, policymakers are faced with the difficult task of whether to implement policies to benefit their nation’s economy such as increasing tariffs, quotas, or transaction taxes. Many countries are looking to impose additional taxes on financial transactions in order to boost revenue lost with the slump of the global economy. In fact, the European Union recently backed a financial transaction tax (FTT) implementation for ten European Union (EU) states (BBC News Business, 2012). If implemented, the EU could tax cross-border transactions such as purchases of securities, bank investments, and loans: for each financial transaction, the government would receive a percentage through the tax. Policymakers theorize that these taxes will be small enough not to impact overall transactions, and that with so many transactions on a day-to-day basis, the government would receive large revenues (BBC News Business, 2012).

These taxes and other transaction taxes such as the securities transaction tax (STT) are brought up by Congresses often enough (Wang & Yau, 2012, p. 2). The idea originated with England’s Stamp Duty and is currently in place in countries such as England where currency transactions are taxed (Wang, p. 2). Proponents argue that FTTs “would increase government revenues that could be used for various purposes, including funding regulatory agencies” (Wang & Yau, 2012, p. 2). The argument is that certain capital flow restrictions would not impact economic growth and much needed revenue will be raised. Those who oppose FTTs argue “increase[d] price volatility, reduce[d] market liquidity, and decrease[d] price efficiency” would
result, causing increased costs of capital and lower security values (Wang & Yau, 2012, p. 2). Yet, this tax appeals to many countries that face high deficits, reduced tax revenue due to unemployment, and dissatisfied constituents who wish to reduce global competition.

Despite the global context, a key question is whether or not this is the best solution for countries to increase revenue. For example, revenue can also increase through economic growth. Thus, it is possible that reducing financial openness is a more painful way for countries to raise revenue—reducing consumer spending power and growth. An alternative to imposing a restriction, such as a tax, would be to increase openness. This could potentially lead to increased growth and may be less painful for consumers in a slumped global economy.

In the context of the recent global economic crisis and the increasing pursuance of trade barriers such as higher tariffs or FTTs, this study seeks to examine how financial openness impacts annual growth: whether or not there is a significant relationship between the two. If there is a relationship, that should direct future policy decisions related to increasing growth of the global economy. Therefore, it is important to examine the relationship between growth and financial openness in order to produce the best policy solution. The current analysis focuses on the impact of open globalized financial markets in developed countries, and the change in annual GDP growth in relation to changes in financial openness.

The key variable examined in the study is financial openness. Financial openness is defined as the extent of openness in cross-border financial transactions (Chinn & Ito, 2007, p. 4). The Openness variable is composed of four sub-variables which measure various aspects of restricting capital accounts. The higher the values, the more open a country is in terms of cross-border transactions. In theory, policymakers should expect that financial openness would lead to higher growth because it allows for investment through spread risk and increased liquidity.
Before additional restrictions are placed on global financial transactions in the form of taxes, assessing the impact of financial openness on economic growth is a priority. This paper will assess panel data for selected developed countries, focusing on annual growth and financial openness. The structure will discuss the literature review, methodology, results, analysis, and conclusion.

II. LITERATURE REVIEW

Many studies over the years found varying relationships between financial openness and growth. Alesina, Grill, and Milesi-Ferretti (1994) found no relationship between openness and growth for advanced industrial nations, and Rodrik (1998) later supports this contention. Klein and Olivei (1999) found that capital openness led to “financial deepening” from which they proposed that “emerging market nations [lack] key political economic institutions through which openness might act beneficially” (p. 1409). Klein (2003, 2007) showed that middle-income countries benefited from capital openness. Countries with more homogenous ethnicities did not benefit from openness according to Chanda (2005). Account openness “reduces the likelihood of currency crises” as found by Glick, Guo, and Hutchinson (2006). Rodrick and Rigobon (2004) discovered that both political and economic institutions are estimated to have positive effects on growth. However, openness is estimated to negatively affect income levels and democracy, although it appears to reinforce the rule of law.

As is clearly shown, the literature reveals varying results across the majority of studies conducted. This is due in part to the specific nature of the studies, and also due to the method in which they were conducted. Yet, theory tells us that a positive relationship should exist. Growth

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1 Financial deepening describes an increased number and variety of financial services in a society (Klein & Olivei, 1999).
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arises from increased investment, and the efficiency of the investment system (Gregario, 1998).

Thus, economic theory points to openness in capital or the financial markets leading to greater growth. One study was able to show just that by changing how openness was measured from the traditional binary method: “0” for open and “1” for closed.

A. Changing the Traditional Methodology

By changing the openness binary variable with an alternative form of measurement, which more fully encompasses financial openness, econometricians found a significant positive relationship with financial trade, openness, and growth. (Quinn & Toyoda, 2008) Quinn and Toyoda (2008) did just that as well as adjusted for changes over time, and as a result, a significant positive relationship was established. In their study, openness was found by de jure measurements: an indicator showing a country’s openness to capital flow, and an indicator of how “compliant a government is with its obligations under the IMF’s Article VIII to free from government restriction the proceeds from international trade of goods and services (Quinn & Toyoda, 2008, p. 1409). This measure was a more accurate representation of capital openness versus the binary measure used in previous studies.

Another alternative openness variable was constructed focusing on capital account restrictions and the intensity of the restriction (Chinn & Ito, 2005). By adapting the openness variable to focus on multiple sub-variables measuring various forms of restrictions, thus making the variable more dynamic, openness was found to have a significant impact on growth.

In addition to changing the openness measurement, some studies reduced the time period to sub-periods, such as making each “period” five years instead of one year (Quinn & Toyoda, 2008). By applying different time delineation from past studies, differences over time are better
controlled (Gregario, 1998, p. 1436). As a result, the openness and growth relationship was positive and significant.

B. Impact of Capital Account Liberalization

Studies using these alternative openness variables assessed whether capital account liberalization can affect economic development through financial development (Chinn & Ito, 2005, p. 1). In particular, liberalized markets were the focus, and assessed whether liberal markets led to more productive investment opportunities (Chinn & Ito, 2005, p. 1). Overall, liberalized markets allowed for growth by allowing real interest rates to rise, increasing diversification of portfolios, and producing more capital and liquidity for investors (McKinnon, 1973; Shaw, 1973). Therefore, one would expect openness to lead to growth.

In addition to increasing openness, some argue that cross-border financial transactions will benefit from more legal and institutional structure in a society (Chinn & Ito, 2005, pp. 1-2). Chinn and Ito (2005) found that higher levels of legal and institutional development in a country directly impacted the functioning of the financial markets. In addition, higher bureaucratic quality and law and order generally enhanced the impacts of an open financial market and increased development of equity markets (Chinn & Ito, p. 3). Furthermore, legal and institutional development related to finance tended to increase stock market trading volumes and, therefore, enhance the impact of openness (Chinn & Ito, p. 3). This resulted from a more stable economy and standardized legal procedures.

C. Examples of Financial Openness Restrictions and Impacts

So what happens if financial openness is restricted? The theory tells us that financial openness restrictions will decrease growth. The literature, focusing on FTTs as a form of
openness restriction, supports this assumption. For example, Wang and Yau (2012) wrote a policy report discussing the impact of financial transaction taxes on growth. This report specifically examines the relationship between FTTs and financial market activity. Financial market activity relates to investment, which in turn relates to growth: less investment leads to a reduction of growth; thus, this study is significant.

One of the arguments that Wang and Yau (2012) explore is whether or not a FTT will affect trading volume and as a result, impact the raising of capital. Since stock markets are used to raise new capital for businesses, a reduction in trading volume could negatively impact investment (Wang & Yau, p. 5). Opposing arguments state that a FTT would enhance market capital-raising due to a reduction in market volatility (Wang & Yau, p. 5). However, Wang and Yau (2012) reviewed other studies and found that “a sizable transaction cost can reduce trading, thinning market liquidity if the buy and sell sides are symmetric” (Wang & Yau, p. 6). Furthermore, Wang and Yau (2012) argue that a FTT could actually increase market volatility due to the trading volume which could increase the bid-asked spread. This impact on liquidity, while also dependent upon other factors, is known as the “liquidity effect” and could decrease or increase market price volatility (Wang & Yau, 2012, p. 7). Another argument against a FTT is that it would reduce trading, which may “decrease informational efficiency by discouraging ‘information’ trades by informed speculators and hedgers” (Wang & Yau, 2012, p. 6). Lack of information reduces the efficiency of the price discovery process which also leads to less efficient trading (Wang & Yau, 2012, p. 6).

Wang and Yau (2012) also reviewed empirical studies and found that most displayed a negative relationship between transaction costs and trading volume. As a result, trading volume and market liquidity decreases. For highly elastic instruments, substitution will take place
“driving some or all trading markets to [other markets]” with lower or no transactions costs (Wang & Yau, 2012, p. 10). Thus, the conclusion here is that a FTT would hurt investment overall by leading to reduced transactions and increased volatility in the financial market.

Thornton Matheson (2010) also completed a review of empirical studies that examined the impact of different FTTs such as securities transaction taxes or banking transaction taxes (BTT). He found that BTTs negatively impacted both the financial market and banking sector through higher interest rates and discouraged investment (Matheson, p. 152).

Matheson (2010) also examined the impact of STTs. He found that STTs tend to reduce the value of the security by almost half in the short-run. However, he explains that the STT “lengthen[s] the average holding period of securities . . . . This would reduce the impact of a given STT on securities values and capital costs” (Matheson, p. 155). Despite this, STTs reduce trading volume in the short run, and in the long run trading volume is reallocated across markets and borders without STTs or with lower STTs (Matheson, p. 158). Therefore, he recommends that gross transaction taxes should be avoided “where more efficient taxes, such as those on net income or consumption, are available” (Matheson, p. 166). Overall, Matheson’s work shows that imposing restrictions on financial transactions would reduce investment, which leads to a reduction in growth. Therefore, he recommends avoiding FTTs as a means to increase tax revenue.

III. METHODOLOGY

Based on the models examined, this model incorporates various aspects from the above studies including variables representing financial openness, a shorter time period, and countries with stable legal and institutional financial frameworks. The literature generally supports the
theory that financial openness is important to growth and that a restriction, such as FTTs or other cross-border transaction limitations, would negatively impact growth. Since there are studies that produced various results related to openness, this study will examine the most recent decade with complete data for a specific group of countries in order to produce more concise and consistent results representing the impact of openness on growth fairly recently.

The goal is to examine the impact of financial openness on developed countries’ annual real GDP per capita growth. The assumption is that developed countries will be more financially open in general, and therefore, any restrictions placed on financial openness will have apparent impacts (Rodriguez, 2007). Additionally, developed countries are assumed to have stronger legal and institutional frameworks to encourage financial openness and growth as suggested by Chinn and Ito (2005), which will further define the relationship between openness and growth. The assumption is that developed countries have the greatest impact on the global economy due to the size of their economies in general, and therefore, are the driving force in the global economy. Therefore, growth in developed countries will lead to global growth generally, but reduced growth will also lead to reduced global growth generally. This is relevant because developed countries are assumed to be the driving force in the global economy.

For this analysis, the regression focused on thirty-four developed countries. The list of thirty-four developed countries was obtained from the World Bank and the CIA World Factbook. Only San Marino was not included due to insufficient data to run regressions. In addition, this study only examines a narrow time period (10 years) as a result of Quinn and

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2 The dependent variable will be the percentage change in annual real GDP per capita growth.
Toyoda’s (2008) work, which showed that clustering for certain time periods produced stronger results by controlling for changes over many years. The period examined is from 2000-2010. The early 2000s decade is an interesting period due to the financial market crash towards the end of the decade. As a result of the market crash, the regression analysis will possibly show that, if there is a significant relationship between financial openness and growth, it will be a negative relationship.

The dependent variable is the percentage point change in real GDP per capita annual growth. Financial openness is the independent variable that is the main focus of this analysis. This variable was created by Chinn and Ito and focuses on four different factors of openness: 1) the presence of multiple exchange rates; 2) restrictions on current account transactions; 3) restrictions on capital account transactions; and 4) the requirement of export proceeds surrender (Chinn & Ito, 2007). This variable was created to account for both the intensity and efficacy of openness, which will provide a more accurate accounting of the relationship between growth and openness (Chinn & Ito, 2007). Other control variables include labor, capital, population, exports, stocks traded, stock turnover, and private credit availability. The variables related to stock, credit, and income were chosen based on Chinn and Ito’s (2005) control variables when analyzing financial openness and other models researched. These values were also chosen to control for correlation with the error term and are summarized as follows in Exhibit 1:

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4 Quinn and Toyoda’s (2008) study categorized the 50 year period into 5 years per period in order to control for effects over time. This helped control for any bias resulting from time changes and made the regression more accurate.
Openness is measured on a scale of 0-4, and the higher the value, the more financially open the country is. Each regression result will represent a percentage point change since each measure of value is a percent including the dependent variable. Openness will be measured in a unit change of 1 or by 25%, and the effect will be a change in percentage points for GDP. Also, all other variables in the model, not including Openness, are percentages are on a 100 point scale.

All the variables are described in Exhibit 2.

The question of concern here is “Does financial openness play a significant role in economic growth?” A follow-up question for this particular decade is “Does financial openness

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5 As noted above, the openness variable is measured by different criteria described by Chin and Ito. This criteria is not reviewed further because only the openness variable is significant, not the individual criteria.

6 This will be an increase of 25% because openness is measured on a scale of 0-4.

7 Some of the percentage values maximums are above 100 which is clearly reflected in the World Bank data.
have a negative effect on growth?” To find this, the following fixed effect regression is examined:

\[ 8 + \text{variables} \]

All the variable information was obtained from data provided by the World Bank. Each was chosen based on economic theory and the literature reviewed. The Stocks Traded variable was included because the number of stocks traded relates directly to financial openness in a country. The Stocks Turnover variable was included for the same reason; the more turnover, more likely the more financially open a country is. Private Credit was included based on the assumption that the more accessible private credit is in a country, the more financially open the country is. The total population was included to control for different country sizes. Finally, each country was clustered to control for varying country effects.

Four regressions were run in total, based on the baseline model. The baseline model controls for various aspects of financial openness and also controls for each country’s population size. Other country control variables were included, but population is one of the most important since this will define a country’s annual GDP percentage growth per capita. In addition to running the various fixed effects regressions, a joint hypothesis test was completed to ensure that all coefficients were not equal to zero. Only 4 models were included in the Results section in order to avoid duplicative variations.

A fixed effects model was used to control for variations across the countries over time. By doing this, chance of a significant relationship being caused by the differences between the countries is removed. The countries were also clustered by country name to control for inflated
standard errors. The fixed effect model was the best model because this regression analyses uses panel data.  

There is a linear relationship amongst the variables. Exhibit 2a in the Appendix shows the relationships between the key control variables and the annual GDP per capita growth. As can be seen from the graphs, there is a slight negative relationship among most of the variables. This is most likely a result of the financial crisis during the end of the decade and will have to be considered when analyzing the regression results.

Finally, the dataset was manually created from a combination of Chinn and Ito’s openness dataset for years 2000-2010, and world development indicators available through the World Bank. The control variables and the dependent variable were taken from these datasets for the years 2000-2010 for the thirty-four developed countries.

I. RESULTS

In this study, six regressions are shown below delineating the impact of openness on annual growth. Exhibit 3 shows the results of the regressions, the robust standard errors, the significant variables at the 10%, 5%, and 1% levels, and the number of observations for each regression.

<table>
<thead>
<tr>
<th>Exhibit 3. Results</th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
<th>(4)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Annual GDP FE</td>
<td>Annual GDP FE</td>
<td>Annual GDP RE</td>
<td>Annual GDP FE</td>
</tr>
<tr>
<td>Openness</td>
<td>-0.166 (0.338)</td>
<td>0.384** (0.148)</td>
<td>0.260* (0.137)</td>
<td>0.449 (0.322)</td>
</tr>
<tr>
<td>Stocks Traded</td>
<td>0.0244*** (0.00607)</td>
<td>0.0108 (0.00763)</td>
<td>0.0105* (0.00630)</td>
<td>0.0230** (0.0110)</td>
</tr>
</tbody>
</table>

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8 A random effects model was run for comparison purposes.
In regression (1) a fixed-effects model was used because this analysis uses panel data.

Population was not included in order to see the effect of only Stocks Traded, Stocks Turnover, and Openness on GDP. Surprisingly, Openness was not significant in this regression. Only stocks traded was significant at 0.0244 at the 1% level. This makes sense since high stock trade rates logically assume that the country is financially open. Openness is most likely not significant as a result of population not being controlled for which may result in omitted variable bias. As a result, more regressions needed to be run in order to control for population and to see if with more variables, Openness might have a significant impact on annual GDP per capita growth.
In regression (2) more variables related to Openness were included. Population was added to control for country size variations. Labor participation and Capital were also added because labor and capital are basic factors for growth. Exports was also included following the theory that the more exports a country has, the greater the growth. Openness was found significant at the 5% level at 0.384. For every 25% increase in Openness,\(^9\) annual GDP growth increases by 0.384 percentage points. This is economically significant because if there is a 100% increase in Openness (from a scale of 0 to a scale of 4) GDP will increase by 1.54 percentage points.\(^{10}\) Considering that GDP annual growth often aimed for is around 3% or 4% this is quite a significant impact. Even if there is only a 50% increase in Openness, growth would still grow by 0.768 percentages points-almost a 1% increase in growth. Labor Participation was significant at the 5% level at -0.395. Although one might be surprised with a negative impact of labor participation on growth, this is reasonable when looking at basic economic theory. In developed countries, the main factor of production most likely is capital instead of labor. Therefore, the marginal product of labor and capital is diminishing and as a result, adding additional labor to a capital intensive economy reduces efficiency and creates a reduction in production. Therefore, this may cause the negative impact on growth.

Exports was also found significant at the 10% level at 0.0904. This is also economically significant for growth-because if Exports has a 100% increase, GDP will increase by 9 percentage points. If GDP is 3% and Exports increases by 50%, then GDP will increase to 7.5% growth which is significant growth for a country’s economy. Economic theory also supports this because increasing the number of exports leads to increased growth. Generally, regression (2) is the better model because the standard errors decreased, and the regression controlled for more

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\(^9\) To reiterate, Openness is measured on a scale of 0-4.

\(^{10}\) 4\*0.384=1.54
factors which reduces the likelihood of omitted variable bias. A joint hypothesis test was run for these variables as well and the null hypothesis was rejected with a P-value of 0. This model appears to be a strong fit for the data.

In regression (3) the same model as regression (2) was used except that this was a random effects model. Regression (2) seems to be a strong model, but I wanted to see if a random effects model would change the result. If the model is valid, this will allow for out of sample predictions which cannot be completed with the fixed effects model. For the random effects model, Openness was still found significant at the 10% level at 0.26. Although less economically significant than regression (2), this is still economically significant because for a 25% increase in Openness, growth increases by 0.26 percentage points. For a 100% increase in Openness, growth increases by about 1 percentage point. Labor participation was also significant at the 1% level at -0.154. Additionally, Stocks traded was significant, as in regression (1), at the 10% level at 0.01. This is less economically significant than regression (1)—for every 1% increase in Stocks Traded, growth increases by 0.01 percentage points which does not have a great impact. The standard errors in this regression were reduced from regression (2). However, a Hausman test was run to see which model, either the fixed effects or random effects, was the best fit for the data. The test rejected the random effects model with a P-value of 0, meaning the null hypothesis that \( \beta \) is the same for both the fixed effects and random effects models is not true. Therefore, the fixed effects mode is best suited for the data.

Regression (4) included Private Credit because in theory the more accessible Private Credit is the more likely that a country is financially open based on the literature reviewed. However, in this regression Openness is no longer significant. This is possibly a result of the reduced number of observations—going from 254 to 115 observations. The effect of Private
Credit on Openness is counter intuitive because Private Credit helps in stimulating economies since it allows, for example, persons to start businesses or other venture by borrowing capital. Thus, this is probably the effect of reduced observations.

Stocks Traded is significant at the 5% level at 0.023. This is still economically significant. If Stocks Traded increase by 100% then annual growth would increase by 2 percentage points going from 3% for example to 5% growth. Labor Participation is still significant and negative at the 1% level at -0.645. Stocks Turnover was significant at the 5% level at -0.032. This is surprising because the assumption was that high turnover of stocks would lead to more growth. However, this might be explained by investors not wanting to keep stocks long as a result of a poor economy, leading to higher stock turnover representing a decrease in growth. The standard errors increased from regression (3). Overall, regression (4) is not the best model due to the reduced number of observations and the higher standard errors.

Generally, regression (2) seems to be the most accurate due to the reduced standard errors, the higher number of observations, and the use of a fixed effects regression. Regression (1) may be affected by omitted variable bias due to the limited number of control variables involved. Regression (3) was rejected by the Hausman test. Due to the reduced observations, regression (4) is also probably not the best fit for the data. As the chosen model, regression (2) shows that Openness is significant for the annual GDP per capita growth for a country. As stated, it is economically significant because for every 25% increase in Openness, annual growth increases by 0.384 percentage points and for every 100% increase in Openness, growth increases by 1.54 percentage points, which is significant in a developed economy which usually aims for 3% or 4% growth. This model shows that Openness is important to growth in helping spur the global economy, but more studies should be conducted as more data becomes available.
II. CONCLUSION

The regression model shows that financial openness does have an impact on annual GDP per capita growth of a developed country’s economy. By controlling for other factors, and applying a fixed effect regression, the relationship between financial openness and growth was found positive as economic theory predicted. The significant relationship between financial openness and growth is an important result, especially in light of proposed financial openness restrictions, showing that it is beneficial for countries to stay financially open in a global economy in order to encourage additional growth. Furthermore, the fact that financial openness is economically significant is extremely important, exhibiting that the more financially open a country is, the more the economy will benefit. By allowing for financial openness, the home and foreign countries will be better off. Developed countries should remain financially open, and not implement unnecessary restrictions such as financial transaction taxes, security transaction taxes, tariffs, or quotas, in order to promote continued growth in the local and global economy.

It is interesting to note that labor participation was significant in a few of the regressions but had a negative impact. One explanation is that since this study focuses on developed countries, the main factor of production most likely uses capital instead of labor. Therefore, the reason may be that the marginal product of labor and capital is diminishing and as a result, adding additional labor to a capital intensive economy reduces efficiency and creates a reduction in production. However, more models for this result are needed to identify plausible causation.

The assumption behind including stocks traded, stocks turnover, and private credit, was that each of these relates to financial openness. Although availability of private credit was not found significant, both stocks traded and stocks turnover were significant in at least one of the
regressions. In implementing financial openness policies, policymakers should focus on creating incentives which will increase the number of stocks traded within a specified time period.

As for the validity of this model, the regressions were internally valid for the population being studied because the statistical inferences directly represent the causal effects for these thirty-four countries. As for external validity, since this is a fixed effects model (except for regression (3)), the results can be extrapolated for all developed countries except for entities outside of the model. Therefore, to carry this model forward, other random effects regressions should be run, as well as Hausman tests, in order to apply this model to non-developed countries.

The positive relationship found between financial openness and recent economic growth is supported by the literature and economic theory. As noted in the Literature Review, Quinn and Toyoda (2008) found a positive relationship when they used more observations over a longer period of time. Importantly, openness was positively significant in a period of economic downturn. This was unexpected, but further supports the assertion that financial markets should remain open to encourage growth, especially in this downtrodden global economy.

Therefore, in light of economic theory and the study noted above, developed countries would be wise to avoid financial restrictions and remain financially open concerning domestic and cross-border financial transactions.\textsuperscript{11} This will most likely benefit the developed country’s economy and lead to growth in the global economy by increasing annual growth per country. In this global economy, a decrease in openness will more than likely hurt local and global economies by decreasing growth, and as a result, reducing tax revenue further—the exact opposite of what policymakers want.\textsuperscript{12} The logic for this is supported in the most basic of economic

\textsuperscript{11} I recommend that a future study be completed to include a larger time period than 10 years to better understand the relationship between openness and growth.

\textsuperscript{12} Also, by decreasing tax revenue, the FTTs and other restrictions would not be serving the purpose that policymakers want, which is to increase tax revenue.
equations: \( growth = investment + consumption + government\ spending + net\ exports \). Policymakers would be wise to “Just Say No” to restricting financial openness in order to aid their countries by encouraging economic growth in a slumping global economy.
Appendix A

Exhibit 2a. Key Variable Graphs Showing a Linear Relationship

GDP and Openness

GDP and Stocks Traded

GDP and Stock Turnover

GDP and Private Credit Amongst Adults
SOURCES


