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Interaction between Exchange Rates and Foreign Investor Behaviors in the Chinese Bond Market*

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ABSTRACT

Purpose – This paper investigates the interaction between the exchange rate and foreign bond investor behaviors in China using monthly time series data, which was available from the public database of the People's Bank of China (PBC).

Design/Methodology/Approach – The empirical data period is a sample of monthly time series data from 2014 to 2019. To analyze the interaction between the exchange rate and foreign bond investor behavior, we employed impulse response function (IRF) and variance decomposition (VDC) analyses based on the vector auto regression (VAR) model.

Findings – According to estimation results, exchange rates have a significant negative effect on foreign bond investors, suggesting that foreign capital flows into the Chinese bond market decrease when the RMB depreciates against the US dollar. This implies that foreign investors fancy the RMB's future earnings because these future earnings can be converted into more US dollars. Inversely, foreign capital flows into the Chinese bond market did not have a significant impact on the exchange rate of the RMB, which is due to the relatively small scale of investments in Chinese sovereign bonds by overseas financial institutions compared to other investments. Furthermore, according to the empirical analysis results, Chinese bond yields have a significant positive impact on foreign bond investor behaviors. At the same time, the yields of the Chinese and US bond markets move in the same direction. These findings indicate that local currency bond yields are affected by global monetary conditions.

Research Implications – To further confirm the influence of foreign investment behavior on the RMB exchange rate in this study, we added interaction variables between foreign bond investment and opening policy to analyze the impact response of the exchange rate. The results showed an obvious negative impact, thereby illustrating that the impulse of foreign bond investment on the RMB per US dollar exchange rate is affected by the open policies of the Chinese bond market.

Keywords: capital market openness, chinese bond market, debt investor behavior, exchange rate, foreign investor
JEL Classifications: F32, F34, G15, G21

I. Introduction

With the implementation of China's "reform and opening" policy over the last 40 years, two important components of the financial market, the bond market and the foreign exchange market, have also undergone tremendous changes. With successive reforms of the exchange rate system, the foreign exchange market has gradually opened, the rate of exchange rate fluctuations has continued to increase, and the extent of market-oriented mechanisms for the RMB exchange rate has become increasingly higher.

In recent years, the Chinese bond market has also taken an increasingly important position in the world's bond market. At present, China's domestic bond market size is second only to the US, thus ranking second in the world. According to the data of the Bank of International Settlements, as of the end of 2018, the balances of outstanding bonds in the US, China, and Japan were USD 436.83 trillion, USD 133.35 trillion, and USD 123.66 trillion, respectively. The Chinese bond market is developing rapidly. As of December 29, 2019, the balance of the Chinese bond market reached RMB 96.96 trillion, representing an increase of RMB 11.22 trillion from the end of 2018 (Huatai Futures., 2019).

In recent years, investment channels for foreign institutions that wish to enter the Chinese bond market have been continuously enriched, and supervision has loosened. As of the end of March 2019, the scale of bonds held by foreign institutions in the inter-bank market reached RMB 1.52 trillion, indicating a year-on-year increase of 33.8%. The CGBs are the main assets held by foreign investors, accounting for 72.1% of total holdings (Chang, 2019).

At present, China has established three major foreign investment channels. First, in 2002, China implemented the QFII program, which allowed investent in the country's exchange and interbank bond markets through a quota system. Then, in 2011, the RQFII program was introduced, which allowed institutional investors to use renminbi to invest in domestic bond markets. Second, since 2010, central banks and sovereign wealth funds have had unlimited access to China's interbank bond market, mainly through CIBM Direct. Third, the Bond Connect program, launched in mid-2017, allows foreign investors to buy and sell bonds traded from Hong Kong SAR to the mainland through the bond market infrastructure connect in northbound trading (capital inflows). Southbound trading (capital outflows) will be opened further when capital liberalization allows residents to buy assets abroad (Schipke, Rodlauer, & Zhang, 2019). Therefore, with the continuous deepening of globalization, the cross-border flow of capital has been accelerating in recent years, resulting in a closer connection between the bond market and the foreign exchange market.

Two important variables connecting the bond and foreign exchange markets are interest and exchange rates. The interest rate is the price of the domestic currency market, whereas the exchange rate is the relative price between domestic capital and foreign capital. Research on the relationship between these two variables can be traced back to Keynes (1923), who introduced the interest rate parity theory. This theory states that the difference between domestic and foreign interest rate levels plays a decisive role in the currency exchange rates of the two countries. It establishes the arbitrage relationship between the interest rate and the spot exchange and forward exchange rates to explain the exchange rate decision and the reason for such a change.

Based on the above theoretical relationships among interest rates, exchange rates, and international capital flows, we start with three questions to study the nexus between the RMB exchange rate and the investment behavior of foreigners in relation to Chinese bonds: (1) Do foreign investments increase or decrease when the exchange rate rises (the RMB depreciates)? (2) When foreigners increase investments, does the exchange rate rise or fall? (3) When the bond interest rate rises, how will it affect the exchange rate and foreign capital investment?

The remainder of this paper is structured as follows. Section 2 reviews prior related research. Section 3 describes the data and reviews the current situation of foreign capital and the RMB exchange rate. Section 4 discusses the methodology

and empirical results, and Section 5 provides a conclusion.

II. Review of Related Literature

Traditionally, the decision to expose an international portfolio to exchange rate risk has been seen as an independent bet on exchange rate movements; it has little to do with the initial decision to invest in foreign assets. According to Benari (1992), this view is valid when the values of domestic and foreign assets are independent of the exchange rate. However, it is invalid when asset returns are closely linked to the exchange rate. In his study, government bond performance is closely tied to the exchange rate, implying that the investment decision goes hand-in-hand with exchange rate risk. Thus, as bond returns are easily arbitraged across countries via the forward exchange market, there exists a close link between relative returns on US and foreign bonds and the exchange rate. The decision of whether to invest in foreign bonds is closely linked with the decision of whether to opt for foreign bond returns in local currencies (i.e., to hedge) or in US dollars (to remain unhedged).

Coeurdacier and Gourinchas (2011) observed that relative bond returns (nominal or real) were strongly correlated with real exchange rates. They concluded that, in a world where investors can trade both equities and bonds, they tended to hedge real exchange rate risk with the latter.

Calvo, Leiderman, and Reinhart (1996) showed that, in most Latin American countries, capital inflows were associated with a marked real exchange rate appreciation. However, in Asian countries, such an appreciation is only evident in the Philippines. For the remaining Asian countries, including Indonesia, Malaysia, and Thailand, the real exchange rate remained surprisingly stable through the foreign capital inflow period. Gabaix and Maggiori (2015) conducted an empirical analysis of international financial markets and found that the presence of large-scale global capital flows exert appreciation pressure on the currencies

of inflow-recipient countries.

Caporale, Ali, and Spagnolo (2015) used the bivariate VAR GARCH-BEKK-in-mean model to examine the impact of exchange rate uncertainty on different components of net portfolio flows, namely net equity and net bond flows, along with their dynamic linkages. The results indicated a negative effect of exchange rate uncertainty on net equity flows in the Euro area, specifically the UK and Sweden, and a positive effect in Australia. They further showed a negative impact on net bond flows in all countries except Canada, which indicated a positive impact. Under the assumption of risk aversion, the findings suggested that exchange rate uncertainty induced a home bias and caused investors to reduce financial activities to maximize returns and minimize exposure to uncertainty, with this effect being stronger in the UK, the Euro area, and Sweden as compared to Canada, Australia, and Japan.

Maturu (2014), using the Bayesian VAR methodology, empirically analyzed the causal relationship between the Kenyan shilling-US dollar exchange rates and net short-term capital inflows. The impulse response results showed that a positive standard deviation shock to net short term capital inflows exerted an immediate statistically significant depreciating effect on the shilling-US dollar exchange rate. The depreciating effect was then followed by a gradual correction, whereby the exchange rate appreciated relative to the initial depreciating effect.

Lidiema and Macharia (2017), using asymmetric dynamic conditional correlation (ADCC) by the Exponential Generalized Autoregressive Conditional Heteroskedastic model (EGARCH), examined market microstructure interrelations among stocks, bonds, and foreign exchange markets in Kenya. From monthly data during the period of January 2004 to June 2017, they found significant market interactions and interlinkages, as well as the existence of time-varying variance correlations between any bivariate set in the three markets in Kenya. While the conditional correlations have been shown to be positive, the unconditional correlation revealed a negative correlation between

the foreign exchange markets and bonds and stocks.

III. Data and Stylized Facts

As shown in Fig. 1 and 2, the proportion of foreign investors in the Chinese bond market remains very small. In particular, from the end of 2013 to the end of 2017, the proportion of foreign investors participating in the Chinese bond market hovered between 1.5% and 2.5%.[1] The "Northbound Link" of Bond Connect, which has been running smoothly since its launch on July 3, 2017, has increased the participation of foreign institutions in the Chinese bond market. At the same time, in July 2017, the PBC issued Announcement No. 7 [2017] to liberalize the credit rating business of overseas rating agencies in the inter-bank bond market. This move promoted the opening of the inter-bank bond market and facilitated the healthy development of the credit rating industry (CCDC Research & Development Center, 2018).

After this, in March 2018, Bloomberg announced that, beginning April 2019, it would gradually include RMB-denominated CGBs and policy bank bonds into the Bloomberg Barclays Global Aggregate Indices. In June of the same year, the State Administration of Foreign Exchange (SAFE) issued "Regulations on the Foreign Exchange Administration of Domestic Securities Investment by Qualified Foreign Institutional Investors", which abolished multiple requirements for the QFII and further facilitated cross-border securities investment. In November, the Ministry of Finance and the State Administration of Taxation issued the "Notice on the Corporate Income Tax and Value-Added Tax Policy for Foreign Institutions Investing in the Domestic Bond Market", which temporarily exempted corporate income tax and value-added tax on bond interest income obtained by foreign institutions investing in the domestic bond market (Investing.com, n.d.). The policy period was temporarily set for three years (CCDC Research & Development Center, 2019).

RMB-denominated CGBs and policy bank bonds have been included in the Bloomberg Barclays Global Aggregate Indices beginning in April 2019. Since then, RMB-denominated bonds have become the world's fourth-largest bond pool by currency following USD, EUR, and JPY bonds. In September 2019, upon the approval of the State Council, SAFE decided to lift the investment quota limits on the QFII and RQFII. At the same time, JPMorgan Chase announced the inclusion of nine CGBs into some of its indices within ten months, beginning February 28, 2020. This was predicted to bring the Chinese bond market, with a monthly capital inflow of USD 3 billion. In October 2020, both the PBC and SAFE announced that an investor could make non-trade transfers of bonds between its account under the QFII/RQFII programs and its account under the Global Connect scheme, and that funds could be transferred directly (CCDC Research & Development Center, 2020). Owing to the implementation of the abovementioned series of bond market opening policies, the participation of foreign investors in China's bond market increased from 2% in 2017 to 3.5% at the end of 2019. In the future, the investments of foreign investors in China's sovereign bonds are expected to increase further.

Fig. 1 shows that, although foreign investor participation in the Chinese bond market continues to grow, it is still limited. Now, we further analyze the investment preferences of foreign investors. As shown in Fig. 3, we can intuitively observe that foreign investors in the Chinese bond market have an obvious risk aversion tendency. Investments in CGBs[2] (70%) and policy bank bonds[3](27%) accounted for 97% of total foreign investment.

As shown by the dotted line in Fig. 1, before the "8.11" exchange rate reform in 2015, the fluctuation range of the RMB per US dollar transaction price in the spot foreign exchange market fluctuated

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1. Cerutti and Obstfeld (2018) compared foreign participation in the bond markets of the United States (about 28% in 2017), Korea (6%), and Japan (9%), which are much more important than those in China.

between plus or minus 2%, indicating very little fluctuation. On the day of the exchange rate reform, the central bank announced an adjustment of the central parity of the RMB exchange rate to 6.2298, indicating a 1.9% depreciation from 6.1162 of the previous day. Since then, the RMB exchange rate against the US dollar has depreciated from 6.2097 in August 2015 to 6.9557 at the beginning of 2017, with a depreciation rate of 12%. In the meantime, although the RMB exchange rate rebounded slightly in a few time periods, such as February to April 2016, it did not last and did not result in significant changes in market expectations. However, since May 2017, the RMB exchange rate has basically achieved two-way fluctuations.

This paper investigates the causal nexus between the exchange rate and foreign bond investor behaviors in China using monthly time series data from 2014 to 2019. Detailed data on bond investment activity for the People's Republic of China (PRC) by different foreign countries are not readily available; therefore, this paper relies on the public database of the PBC, the total of domestic RMB financial assets held by overseas entities (PBC, 2015/2016/2017/2018/2019/2020).[4] In order to better grasp the changes in the scale of foreign investment in China's bond market, we use the ratio of foreigner monthly investment stock to the total amount outstanding in the Chinese bond market. For the exchange rate variable, we used the monthly average spot exchange rate in the China Foreign Exchange Trading System. Several explanatory variables were also added, based on previous studies, among a number of influencing factors for bond investment. We used the yield of a 10-year government bond to capture the yield of the Chinese bond market, and the 10-year US Treasury yield to reflect the US bond market yield. The standard deviation of the Shanghai Composite Index was used to reflect China's financial risk factors to foreign investment. As indicated in China's Bond Market Overview 2017–2019, after July 2017, the government has taken a series of positive measures to open the bond market, which has also greatly promoted the inflow of foreign capital into China's bond market. This demonstrates the interactive relationship between the opening policy of the financial market and the behavior of foreign investors. Therefore, in order to better grasp the relationship between the variables in the model, we have added an interactive term[5] between foreigner bond investment and open policies.

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2. This refers to central government bonds (CGBs). With the central government having the highest credit rating as the issuing body, the CGBs are issued via the MOF and classified into book-entry bonds and savings bonds. The book-entry CGBs are issued by auction through the CCDC, and are traded in the inter-bank bond market, exchange bond market, and commercial bank counter market under the general depository of the CCDC. At present, there are discount CGBs with maturities of 91, 182, and 273 days, as well as coupon-bearing CGBs with maturities of 1, 2, 3, 5, 7, 10, 15, 20, 30, and 50 years (CCDC Research & Development Center, 2020).

3. The issuers are developmental financial institutions (China Development Bank) and policy banks (Export-Import Bank of China and Agricultural Development Bank of China). In recent years, innovation has been strengthened in policy bank bonds. For example, issues targeted at poverty alleviation, the issuance of green financial bonds under Bond Connect, and pilot issue via flexible auction were made. At present, policy bank bonds are also traded in the commercial bank counter market, wherein China Development Bank (CDB) bonds, in particular, are already issued in a regular manner (CCDC Research & Development Center, 2020).

4. Overseas institutional investors are overseas central banks or monetary authorities, sovereign wealth funds, international financial organizations, RMB clearing banks, overseas participating banks for RMB settlement of cross-border trades, overseas insurance institutions, QFII, RQFII, financial institutions legally incorporated overseas, such as commercial banks, insurance companies, securities firms, fund managers, other asset managers, and investment products issued by the aforementioned entities to their clients, as well as and overseas pension funds, charity funds, endowment funds, and other mid- to long-term institutional investors recognized by the PBC (CCDC Research & Development Center, 2020).

5. We use the ratio of foreigner monthly investment stock to the total outstanding amount of China's bond market multiplied by qualitative dummy policy variables to express the interactive term between foreigner bond investment and open policies.

Fig. 1. Foreign Investment vs. Sino-US Bilateral Exchange Rate Trend

(Unit: Billion Yuan, %)
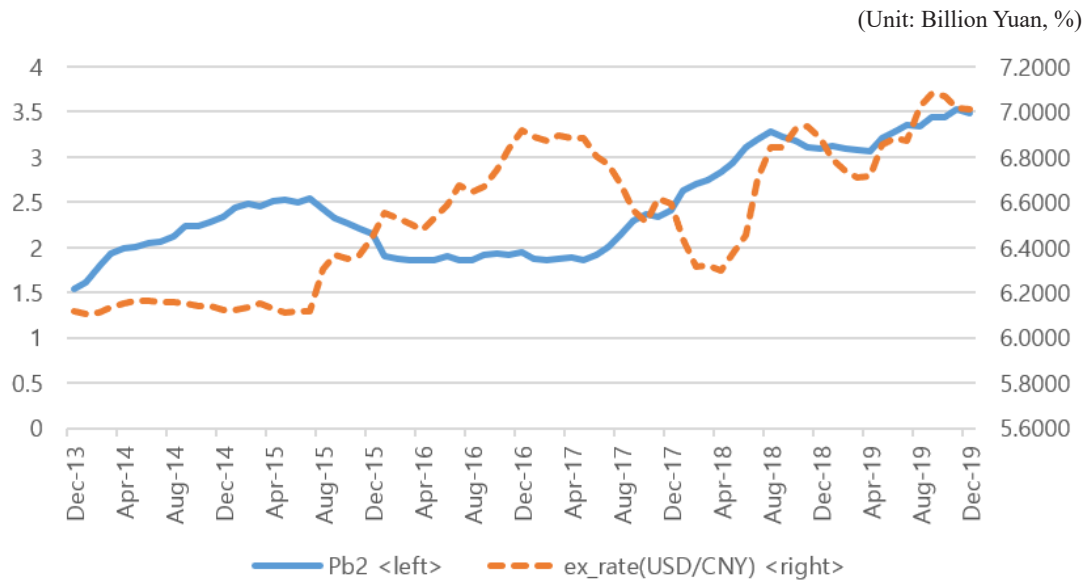
Note: Pb2 indicates the ratio of foreigner monthly investment stock to the total amount outstanding in the Chinese bond market.

Sources: PBC (2015/2016/2017/2018/2019/2020); CCDC Research & Development Center (2018/2019/2020); China Foreign Exchange Trade System (CFETS) (n.d.-a/n.d.-b); authors' estimates.

Fig. 2. Annual Trend of Foreigner Investment Stock vs. the Total Amount Outstanding in the Chinese Bond Market
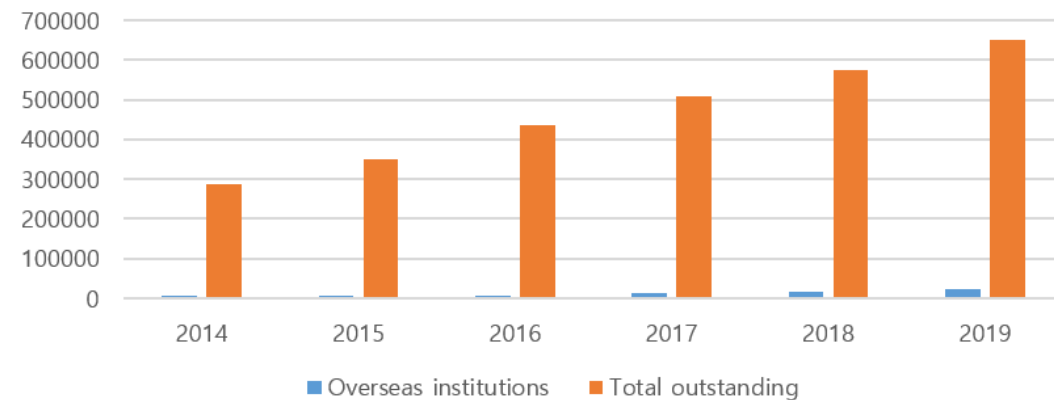
Sources: PBC (2015/2016/2017/2018/2019/2020); CCDC Research & Development Center (2018/2019/2020); authors' estimates.

Fig. 3. Proportions of Overseas Institutions Holding Structure of Bonds under CCDC Depository at the End of 2019
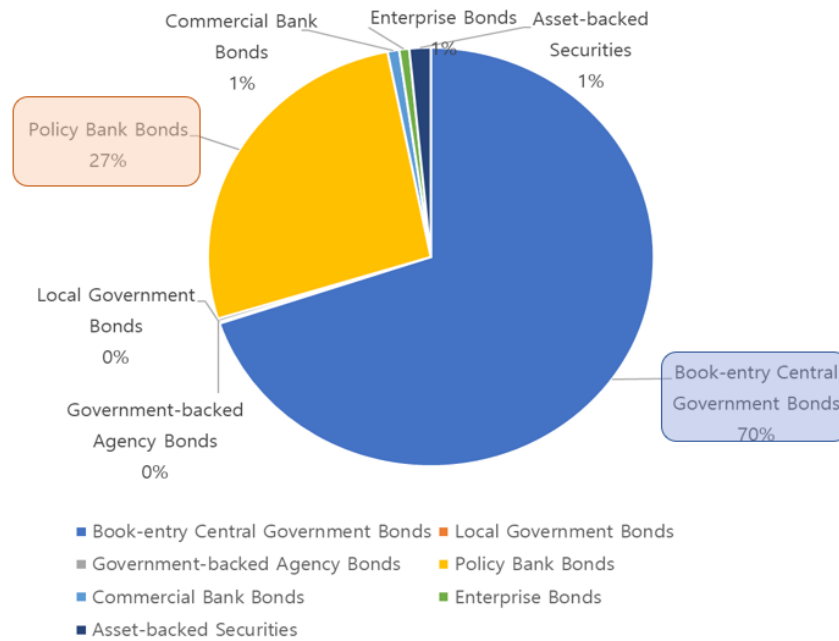
Source: CCDC Research & Development Center (2020).

IV. Empirical Model and Estimation Results

The impulse response function (IRF) and variance decomposition (VDC) test in the VAR model were applied to empirically test the variables. The shock to the ith variable not only directly affects the ith variable, it is also transmitted to all other endogenous variables through the dynamic (lag) structure of the VAR. The effects of the shocks on the variables are assessed by estimating the IRF and VDC. The VAR model can be expressed as follows (Hamilton, 1994):

$$B_0 X_t = \beta + \sum_{i=1}^{k} B_i X_{t-i} + \epsilon_t \qquad (1)$$

where lag length was selected by the Akaike Information Criteria (AIC), and the vector X_t included all six variables. In order to better distinguish the impact of the government's active financial market opening policy on foreign investment behavior and exchange rate changes, we performed a comparative analysis before and after, adding the interaction variables. First, we used a 5-variable ($DLOG\_PB2_t$, $DLOG\_EX\_RATE_t$, $DLOG\_CN\_10Y_t$, $DLOG\_US\_10Y_t$, and $DLOG\_RISK_t$) model without an "interactive term" for IRF analysis; second, we added a 6-variable ($DLOG\_PB2_t$, $DLOG\_EX\_RATE_t$, $DLOG\_PB2_t * OPEN$, $DLOG\_CN\_10Y_t$, $DLOG\_US\_10Y_t$, and $DLOG\_RISK_t$) model with an "interactive term" for IRF analysis. We applied the percentage change in the ratio of foreigner monthly investment stocks to the total amount outstanding in the Chinese bond market ($DLOG\_PB2_t$), the percentage change in the exchange rate of the US dollar to RMB ($DLOG\_EX\_RATE_t$), the percentage change in the ratio of foreigner monthly investment stocks to the total amount outstanding in the Chinese bond market multiplied by qualitative

dummy policy variables ($DLOG\_PB2_t * OPEN$), the percentage change in the yield of 10-year Chinese government bond ($DLOG\_CN\_10Y_t$), the percentage change in the yield of 10-year US Treasury Note ($DLOG\_US\_10Y_t$), and the percentage change in the financial risk factors in China ($DLOG\_RISK_t$). In addition, B_0 and B_i represent the matrices of coefficients, where β denotes intercept terms, and ϵ denotes the vector of serially and mutually uncorrelated structural innovations.

In order to investigate the nexus between exchange rate changes and the changes in foreign investment scales, this study employed the IRF for analysis. The IRF estimates the responses for current and future endogenous variables of a one-time shock on the variables in the VAR system. The IRF can be technically described in vector MA (∞) form as follows:

$$X_t = \mu + \epsilon_t + A_1\epsilon_{t-1} + A_2\epsilon_{t-2} + A_3\epsilon_{t-3}\cdots \quad (2)$$

where X_t is a vector including the endogenous variables, and μ is the mean of X_t. Matrix A_s can be expressed as $\frac{\partial X_{t+s}}{\partial \epsilon_t} = A_s$. The row i and column j elements of A_s indicate the impact of a one-unit increase in the jth variable's innovation at date $t(\epsilon_{j,t})$ on the ith variable at time $t+S(X_{i,t+s})$. The coefficients sets $\frac{\partial X_{i,t+s}}{\partial \epsilon_{j,t}}$, are the IRFs that show the response of $X_{i,t+s}$ to a one-time impulse in $X_{j,t}$ when all other variables are constant.

Table 1. Unit Root Tests

Variables	Augmented Dickey-Fuller Test Statistic	Phhillips-Perron Test Statistic
$DLOG\_PB2_t$	-4.714***(0.000)	-4.573***(0.000)
$DLOG\_EX\_RATE_t$	-5.240***(0.000)	-5.155***(0.000)
$DLOG\_PB2_t * OPEN$	-3.096***(0.003)	-3.045***(0.004)
$DLOG\_CN\_10Y_t$	-6.355***(0.000)	-6.335***(0.000)
$DLOG\_US\_10Y_t$	-9.232***(0.000)	-9.194***(0.000)
$DLOG\_RISK_t$	-14.483***(0.000)	-16.271***(0.000)

Notes: 1. $DLOG\_PB2_t$, $DLOG\_EX\_RATE_t$, $DLOG\_PB2_t * OPEN$, $DLOG\_CN\_10Y_t$, $DLOG\_US\_10Y_t$, and $DLOG\_RISK_t$ indicate the percentage change in the ratio of foreigner monthly investment stocks to the total amount outstanding in the Chinese bond market, the percentage change in the exchange rate of the RMB per US dollar, the percentage change in the ratio of foreigner monthly investment stocks to the total amount outstanding in the Chinese bond market multiplied by qualitative dummy policy variables, the percentage change of yield of 10-year Chinese government bond, the percentage change of yield of 10-year US Treasury Note, and the percentage change of financial risk factors in China, respectively.[6]

2. The values in parentheses indicate p-values. *** indicates statistical significance at the 1% level.

3. The unit root test of $DLOG\_PB2_t * OPEN$ is including none, and the remaining five variables include intercepts.

The forecast error VDC aims to measure the relative importance of individual explanatory variables by calculating the proportion of the variation of individual explanatory variables in the model in the variance of forecast errors derived while increasing the prediction period of endogenous variables. The VDC of VAR provides information about the relative importance of random innovations. This breaks down the variance of the forecast error for each variable into components that can be contributed to each of the endogenous variables. The VAR model provides the option to display the VDC in tabular form. This is useful in evaluating how shocks reverberate through a system, and in assessing the external shocks to each variable. Hence, in order to further confirm the nexus between exchange rate changes and the changes in foreign investment scales, this study employed VDC.

As shown in the empirical results in Table 1, we employed the Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) tests to evaluate the unit root. The findings indicate that these variables have the stationarity for appropriate modeling of the VAR.

Fig. 4. Impulse Response Function Results for 5-variable Model
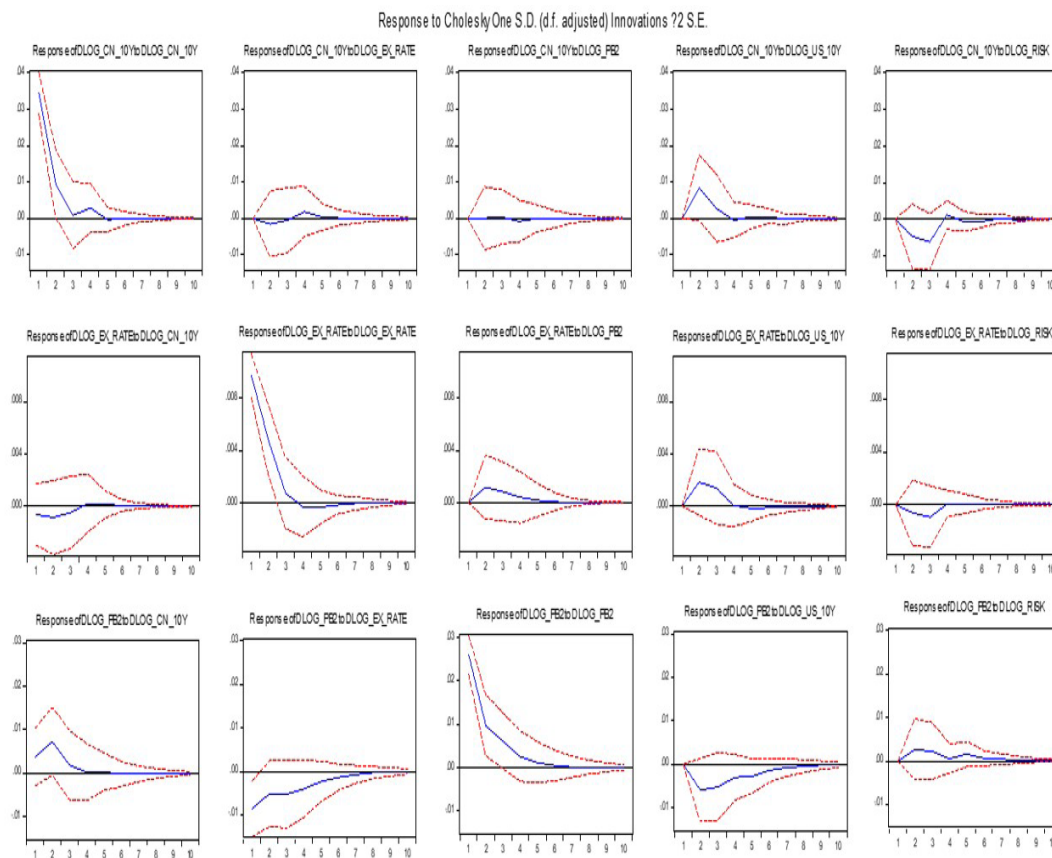
Note: We selected lags via the Akaike Information Criteria (AIC), when lag = 2, AIC was the smallest.

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6. In this paper, the standard deviation of the Shanghai Securities Composite Index (SSECI) was used as a proxy variable for China's financial risk factors.

Fig. 5. Impulse Response Function Results for 6-variable Model
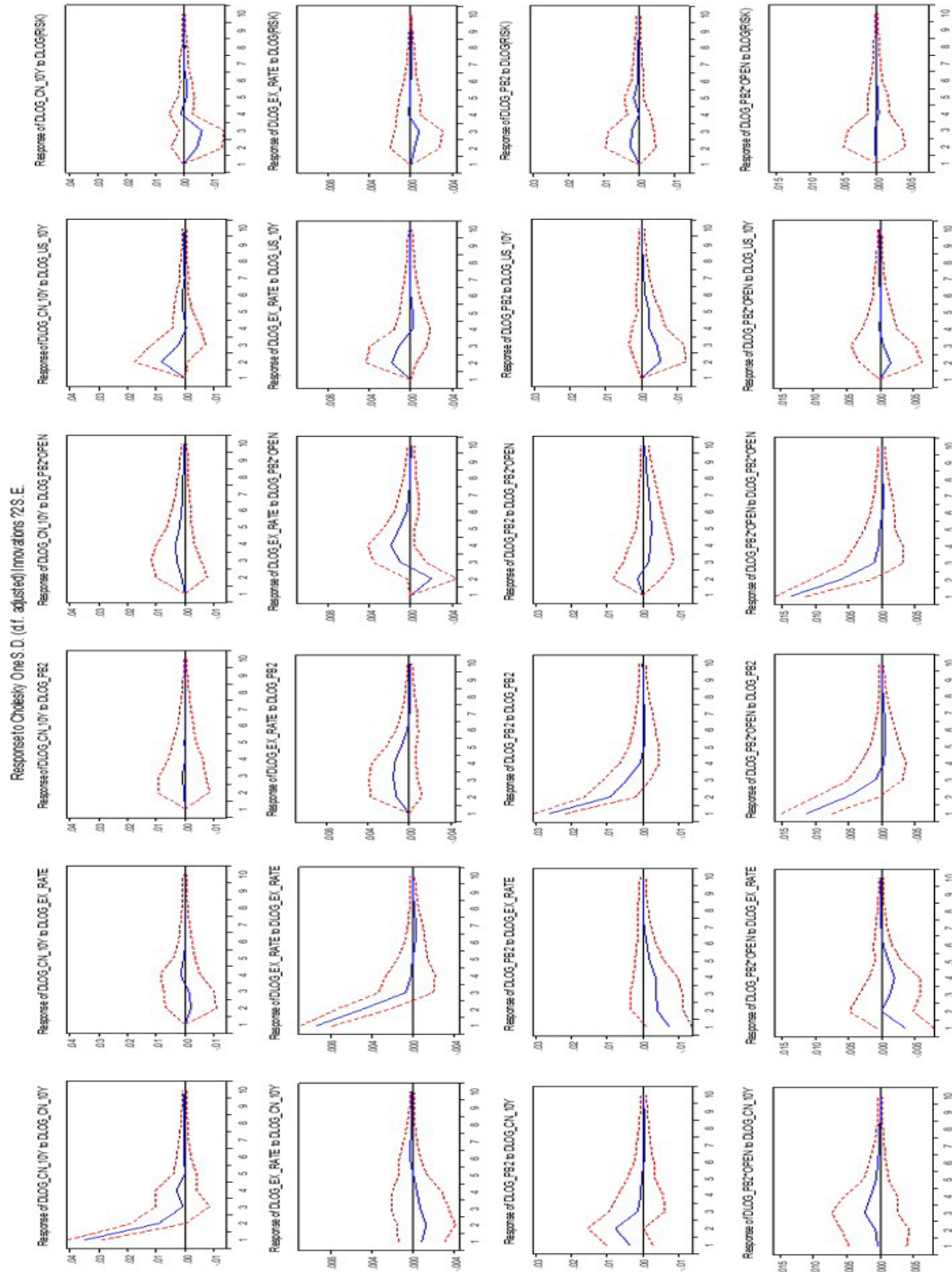
Note: We selected lags via the Akaike Information Criteria (AIC), when lag = 2, AIC was the smallest.

Fig. 4 shows the results of the 5-variable model of the IRF. It illustrates the impulse response of the RMB per US dollar exchange rate, the scales of foreign investments in the Chinese bond market, the yield of 10-year Chinese government bonds, the yield of 10-year US Treasury notes, and financial risk factors in China during the sample period from January 2014 to December 2019. As shown in Fig. 4, when the impulse is the RMB per US dollar exchange rate, the response of the scale of foreign investment in China's bond market is significantly negative. This proves that foreign bond investment is affected by the RMB per US dollar exchange rate, indicating that foreign capital flows into China's bond market decrease when the exchange rate rises (the RMB depreciates). In other words, when the RMB appreciates against the US dollar, the foreign capital flows into China's bond market increased. This implies that foreign investors fancy the RMB's future earnings because these future earnings can be converted into more US dollars. When the RMB is in a strong state, it can increase the investment confidence of foreign investors and encourage them to actively enter the Chinese bond market; on the contrary, when the RMB is weak, it will cause investors to lose investor confidence and leave the Chinese bond market. Inversely, when the impulse is represented by the scale of foreign investments in the Chinese bond market, the response of the RMB per US dollar exchange rate was not significantly influenced. This is because the overall scale of investment in Chinese sovereign bonds by overseas financial institutions is relatively small compared to other investments.

Fig. 4 also shows that when the impulse is the yield of a 10-year Chinese government bond, the response of the scale of foreign investment in China's bond market is significantly positive. This is evidence of the "positive feedback trading" behavior of foreign investors in relation to the Chinese bond market. When the Chinese bond market yields an increase, foreign bond investments also increase. Furthermore, Fig. 4 indicates that when the impulse is the yield of 10-year US Treasury notes, the yield of a 10-year Chinese

government bond shows a significant response characterized by a positive sign. This means that the yield of the Chinese bond market and that of the US bond market move in the same direction; when the yield of the US bond market rises, the yield of the Chinese bond market also rises. This result is the same as reported by Gadanecz, Miyajima, and Shu (2014), in that local currency bond yields are affected by global monetary conditions. This is because the monetary easing policies in advanced economies have prompted investors to search for yields by a switching to emerging economies after the onset of the financial crisis in 2008. They believe that the local currency bond yields in emerging market economies (EMEs) have been moving more closely with US long-term yields, which probably reflects growing foreign participation in the domestic bond markets of EMEs.

Meanwhile, Fig. 5 shows the IRF results of the 6-variable model in which the interaction variable between foreigner bond investment and open policies has been added. As indicated in Fig. 5, when the impulse is the interactive term between foreigner bond investments and open policies, the RMB per US dollar exchange rate shows a significant response characterized by a negative sign. This illustrates that the RMB appreciates against the US dollar when the interactive term increases. This proves that the impulse response of the RMB per US dollar exchange rate to foreign bond investment is affected by the open policies of the Chinese bond market. In particular, if the policy of the Chinese bond market is more open, the behaviors of foreign investors have a more obvious effect on the foreign exchange market. In other words, in a more free and open financial market, the inflow of foreign capital into the Chinese bond market can cause the RMB to appreciate against the US dollar. This is the big difference from the IRF results of the 5-variable model shown in Fig. 4.

VDC analysis is a widely used method for examining the relative effects of variables. The methodology splits the total variance related to an outcome to ascribe part of the total variance to period and other variable effects. We estimated the

forecast error VDC of the exchange rate and foreign bond investment using Cholesky factors, which can be found in Tables 2 and 3. The results reported in Table 2 suggest that, in the case of China, innovations in the exchange rate are explained accordingly by the preponderance of its own past values (81%), and the interaction variable between foreigner bond investment and open policies (8%). On the other hand, as shown in Table 3, the innovations in the foreign bond investment are mainly explained by its own past values (74%), by the exchange rate (10%), and by the domestic long-term interest rate (7%). The VDC analysis results indicate that exchange rate changes are substantially affected by the interaction term between foreign bond investments and open policies. Foreign bond investment is most affected by exchange rate changes, followed by domestic long-term interest rates. The VDC analysis results are consistent with those of the previous IRF analysis.

Table 2. Variance Decomposition Analysis Results for Exchange Rate

		Variance Decomposition of DLOG_EX_RATE				
Period	DLOG_CN_10Y	DLOG_EX_RATE	DLOG_PB2	DLOG_PB2*OPEN	DLOG_US_10Y	DLOG_RISK
1	0.887	99.113	0.000	0.000	0.000	0.000
3	2.315	86.381	2.932	4.050	3.726	0.596
5	2.303	81.341	4.750	7.460	3.546	0.601
7	2.378	81.158	4.758	7.571	3.534	0.601
10	2.393	81.129	4.771	7.571	3.533	0.603

Table 3. Variance Decomposition Analysis Results for Foreign Bond Investment

		Variance Decomposition of DLOG_PB2				
Period	DLOG_CN_10Y	DLOG_EX_RATE	DLOG_PB2	DLOG_PB2*OPEN	DLOG_US_10Y	DLOG_RISK
1	0.887	99.113	0.000	0.000	0.000	0.000
3	2.315	86.381	2.932	4.050	3.726	0.596
5	2.303	81.341	4.750	7.460	3.546	0.601
7	2.378	81.158	4.758	7.571	3.534	0.601
10	2.393	81.129	4.771	7.571	3.533	0.603

V. Conclusion

Since China implemented the "reform and opening" policy 40 years ago, two important components of the financial market, namely the bond market and foreign exchange market, have also undergone tremendous changes. With the successive reforms of the exchange rate system, the foreign exchange market has gradually opened, the rate of exchange rate fluctuations has continued to increase, and the extent of the market-oriented mechanism for the RMB exchange rate has become increasingly higher. Furthermore, the Chinese bond market has taken an increasingly important position in the world bond market in recent years. According to data from the Bank of International Settlements, as of the end of 2018, the size of China's domestic bond market stock is second only to the US, thus placing it in the second place in the whole world. Such achievements are inseparable from China's open policy. The next step concerns how to introduce foreign capital to promote domestic economic development. With the entry of foreign capital into China, central government policymakers will face several difficulties. For instance, a large number of foreign capital inflows can lead to a rise in the real exchange rate, foreign exchange intervention, massive currency issuance, and inflation. Therefore, if this study can correctly grasp the interaction between foreign investor behaviors and the exchange rate, it can guide policymakers to better formulate relevant policies.

This paper investigates the interaction between the exchange rate and foreign bond investor behaviors in China using monthly time series data from 2014 to 2019. In order to analyze the interaction between variables, we employed IRF and VDC analyses based on the VAR model.

According to estimation results, exchange rates have a significant negative effect on foreign bond investors, suggesting that foreign capital flows into the Chinese bond market decrease when the RMB depreciates against the US dollar. In other words, when the RMB appreciates against the US dollar, foreign capital flows into the Chinese bond market increase. This implies that foreign investors fancy the RMB's future earnings because these future earnings can be converted into more US dollars. When the RMB is strong, it can increase the investment confidence of foreign investors and actively encourage them to enter the Chinese bond market; on the contrary, when the RMB is weak, it will cause investors to lose confidence and leave the Chinese bond market. Inversely, foreign capital flows into the Chinese bond market did not have a significant impact on the exchange rate of the RMB, which is due to the relatively small scale of investments in Chinese sovereign bonds by overseas financial institutions compared to other investments.

In recent years, the Chinese government has adopted a series of obvious and effective bond market-opening policies. In order to further confirm the influence of foreign investment behaviors on the RMB exchange rate in the present study, we added interaction variables between foreign bond investment and opening policy to analyze the impact response of the exchange rate. The results showed an obvious negative impact, thereby illustrating that the impulse of foreign bond investment on the RMB per US dollar exchange rate is affected by the open policies of the Chinese bond market.

Furthermore, according to the empirical analysis results, Chinese bond yields have a significant positive impact on foreign bond investors. When the Chinese bond market yields rise, foreign bond investments also increase. At the same time, the yields of the Chinese and US bond markets move in the same direction; that is, when the yield of the US bond market rises, the yield of the Chinese bond market also rises. This finding indicates that local currency bond yields are affected by global monetary conditions.

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Analyzing the Unemployment Hysteresis in the Philippines using the VAR Model

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ABSTRACT

Purpose – This paper examines the dynamic behavior of unemployment in the Philippines as well as the macroeconomic variables that are linked to it such as GDP, inflation, and interest rate. It also determines the impact of transitory shocks on unemployment via the hysteresis hypothesis.

Design/Methodology/Approach – The Vector Autoregressive (VAR) model is the appropriate model to carry out the purpose of the study using data from the International Financial Statistics of the International Monetary Fund. The Dickey-Fuller Test is used to determine the stationarity of the time series data before proceeding to use the VAR model. Afterward, the Impulse Response Functions (IRF) are generated to analyze the short and long-run effects of each endogenous variable to unemployment followed by the Forecast Error Variance Decompositions (FEVD) that measures the contribution of each shock to a variation in one variable.

Findings – Based on the preliminary results of the stationary test, a unit root exists suggesting that unemployment constitutes a non-linear behavior, meaning, hysteresis is present. Moreover, IRF showed that a one-time shock in unemployment has a positive change in its behavior. On the other hand, the one-time shocks of GDP growth, inflation, and interest rate generated a negative response. Unemployment was also found to have exhibited the lowest inertia or rate of adjustment in response to GDP growth among all the variables. This was supported by the FEVD result that the long-run behavior of unemployment is the most critical variable affected by its own lagged value or shock.

Research Implications – The results of the study have important implications for labor market reforms since past studies in the Philippines concerning unemployment hysteresis are being studied negligently. Studies related to this paper deeply analyze the transitory shocks that induce permanent effects on Philippine unemployment which will greatly address the unemployment behavior and forecast more vividly.

I. Introduction

Unemployment is defined by the Philippine Statistics Authority (2019) as the condition of being active in looking for work yet still being out of work because of its unavailability or simply because of the individuals' inability to find one. It is a vital indicator used to determine the health of the economy as a whole. The common macroeconomic factor that affects unemployment is embedded in the overall performance of the economy reflected in Gross Domestic Product (GDP) and transmitted to inflation and interest rate.

There are instances that the unemployment rate continues to persist even after the economy rebounds from recession. This phenomenon can be explained by unemployment hysteresis. The hysteresis hypothesis, as proposed by Blanchard and Summers (1986), challenges the prevalent macroeconomic theory of the natural rate of unemployment by Friedman (1968) that assumes unemployment automatically reverts to its natural rate after a recession has passed. Contradictorily, the hysteresis hypothesis proposes that a recession can contribute lasting effects on unemployment. It assumes that transitory shocks can manifest permanent effects on unemployment in the long run, raising unemployment equilibrium to a higher level and explaining its persistence and its behavior as unpredictable.

Over the years, several methods have been used to examine and re-examine the behavior of unemployment. Similar to some of the studies above, this study also employed the Augmented Dickey-Fuller (ADF) Test in testing for stationarity and the VAR Model in accounting for the relation of shocks to unemployment. Despite the discrepancies of the ADF Test regarding having less statistical power, it does not hide the fact the ADF Test is the most straightforward and easy to follow estimation procedure (Furuoka, 2017). It is the most fundamental model upon which other unit root analyses were formulated. On the other hand, the Vector Autoregressive Model by Sims (1980), also employed in the studies of Rodriguez-Gil (2017), Fabiani, Locarno, Oneto, and Sestito (2000), Garcia, Hernandez, and Bolivar (2017),

and Sunde and Akanbi (2015), has always been a useful tool in evaluating macroeconomic models. The VAR developed by Sims (1980) allows the following: (1) forecasting of economic time series, (2) designing and evaluating of economic models, and (3) evaluating the consequences of alternative policy actions. Thus, it is also applicable to the investigation of hysteresis and is suitable to this study as it can analyze the interactions and contributions of macroeconomic variables responsible for affecting unemployment. Consequently, it allows the prediction of the movement of unemployment and the formulation of effective economic policies that will restrain negative effects on employment in the face of another economic shock.

The impact of the 1997 and 2008 financial crises is seen to have resulted in asymmetric unemployment behavior in the Philippines. In assessing the effect surrounding the crises, an understanding of unemployment hysteresis would provide the mechanism that will help policymakers forecast future trends and formulate the policies serving as a countermeasure when certain related crises arise. In an attempt to report the shortcomings of literature available for the country, this study adopts the vector autoregressive approach developed by Sims (1980) using 1998Q1 to 2019Q3 data from the International Financial Statistics of IMF and Bangko Sentral ng Pilipinas (1996-2019) online statistical database.

II. Theoretical Framework

Previous studies on the behavior of unemployment rates and shocks are anchored on the two theories of unemployment, namely, the natural rate of unemployment also known as NAIRU (non-accelerating inflation rate of unemployment), and the hysteresis hypothesis. NAIRU is interchangeable with the natural rate of unemployment since inflation tends to rise when the unemployment rate falls below the natural rate, and conversely when the unemployment rate rises above the natural rate, inflation tends to fall. The concept of the natural rate of unemployment

was first conceptualized by Phelps (1967) which states that unemployment only follows a stationary process since trade-off between shock;, say that inflation and unemployment only happen in the short run and that unemployment will eventually revert to its equilibrium in the long run, manifesting the Phillips curve.

In this classical theory, inflation and demand management policies help determine unemployment in the short run only whereas it is the supply side governed by labor market conditions (minimum wages, efficiency wage payments, unemployment benefits, demographical factors, among others) that influence the natural rate of unemployment in the long run (Bastav, 2019). Contrary to this, however, hysteresis proposes that changes in the cyclical unemployment brought about initially by aggregate demand changes would affect the natural rate of unemployment in the long run through the "loss of human capital" and the "insider-outsider setting" as previously explained. One instance is when a decrease in aggregate demand causes a rise in short-term unemployment but transitions to the long-term if the slump continues. The initial short-term unemployment decreases inflation, but the inflation eventually stabilizes. At that point, NAIRU is already higher because of the pool of long-term unemployed (Ball, 2009).

The hysteresis hypothesis, on the other hand, which was first introduced by Blanchard and Summers (1986) claims that shocks can have permanent effects on unemployment in the long run, implying the presence of a unit-root process. The presence of a unit root indicates that the unemployment rate is not mean-reverting to its natural rate of equilibrium or long-run average level and shows a deficiency in the Phillips curve. In addition, contrary to the dichotomy that unemployment is independent of the impacts of demand-side factors, the alternative hysteresis hypothesis proposes otherwise. Hysteresis emphasizes the actual level of unemployment as an effect of the monetary policy pull the natural rate of unemployment in its own direction like a magnet. Changes in the NAIRU are propelled by demand movements that initially deviate actual unemployment from its natural rate. Since

aggregate demand influences actual unemployment and past actual unemployment influences the natural rate, hysteresis means that demand in turn also influences NAIRU. Defendants of hysteresis do not reject the mainstream theory as wrong, however, but rather contribute to it by adding that the movements in actual demand may also be an alternative cause of change in NAIRU (Bastav, 2019). Hysteresis included that the changes in the natural rate were the result of changes in cyclical unemployment rather than just the developments in the supply side.

Theories on the natural rate of unemployment and hysteresis were both conceptualized and developed in hopes of explaining the driving factors of the behavior of unemployment and its persistence. NAIRU dwells on the idea that the effects of shocks on the unemployment rate are only linear and short-lived, making it easy for policymakers to predict. On the other hand, hysteresis explores the possibility of shocks to have persisting and varying degrees of impacts on unemployment. Hysteresis is open to the idea that unemployment equilibrium can rise or go down in the long run, making its forecasting more challenging to policymakers.

III. Methodology

To examine the preliminary tests, this study undergoes unit root testing using the Augmented Dickey-Fuller Test to determine its particular order of integration. The series was tested in both their levels and first differences. In determining the optimal lag length, numerous information criteria were used and evaluated, namely, the Final Prediction Error (FPE), Akaike (AIC), Hannan-Quin (HIC), and Schwarz-Bayesian (SBIC). Then, the Vector Autoregressive model is employed to verify the assumption that past values of these economic variables such as GDP, inflation rate, interest rates, and most importantly, the unemployment rate effect on its current values. This model also involves the two commonly used types of structural analysis which are the Impulse Response Functions (IRF) and Forecast Error Variance Decompositions

(FEVD). IRF examines the magnitude of effect a shock on one of the endogenous variables has to itself as well as the rest of the variables by measuring the time it takes to revert to its initial equilibrium before the appearance of the shock. FEVD measures how much of the variation of one variable is attributed to its shock and shocks of the other variables, respectively.

This study employed the same VAR model used also by Garcia, Hernandez, and Bolivar (2017) in the Mexican case which is expressed as follows:

$$\alpha_t = \lambda \alpha_{t-1} + a Z_t + \varepsilon_t \tag{1}$$

Where α_t = unemployment in period t, λ = the fraction of unemployment for the period t – 1, Zt = some endogenous macroeconomic variables in time t, and a = weight coefficient. The effects of a policy are reflected by variable Z weighted by a coefficient and involve as well a carry over to unemployment time t or the present.

Considering the analyses of the time series, a suggested equation that explains the effect of hysteresis in the labor market is as follows:

$$\begin{aligned} DUnemp_t = \ & \alpha_0 + \alpha_1 DUnemp_{t-1} \\ & + \alpha_2 DRealGDP_{t-1} \\ & + \alpha_3 DCoreInf_{t-1} \\ & + \alpha_4 DIntRate_{t-1} + e_t \end{aligned} \tag{2}$$

The linear model of the five variables integrated of order I(1) in the equation above can help explain the behavior of unemployment in the Philippines through its own lagged values which are determined with the unit root and causality tests. Only one lag

was used to represent a generalized consideration of variables per quarter. According to Garcia, Hernandez, and Bolivar (2017), this allows the validation of autocorrelation and the exclusion of an excessive number of lags. Hence, this model can predict the system of the interrelationship among the series and measure the impact on the dependent variable brought by random disturbances.

IV. Results and Discussion

Table 1 displays the summary statistics of the variables of interest. It displays the maximum value, minimum value, sample mean, and standard deviation. The average unemployment rate is 8.2 % which is way above the 3.8% to 5.2% target set in the Philippine Development Plan for 2017-2022 (NEDA, 2017). The real GDP growth average is 4.8% which falls below the government target between 6% to 6.5% while the inflation rate is 4.3% on the average which exceeded the target within 2% to 4%. Standard deviation registered at 3.5, the highest among all the included variables. As for the core inflation, its rates ranged from 0.6 to 11.3 with an average of 4.3 and a standard deviation of 2.2. Finally, the average interest rate is 5% which is a bit higher than the policy interest rate of the country.

To investigate the relationship between unemployment, real GDP, core inflation, and interest rate, the vector autoregressive (VAR) model was used. A four-variable VAR investigates all possible combinations such that each variable is once modeled endogenously and exogenously in the three remaining specifications.

Table 1. Summary Statistics

Statistics	Unemployment Rate	Real GDP	Core Inflation	Interest Rate
Maximum	13.9	8.1	11.3	19.1
Minimum	4.7	-16.9	0.6	0.04
Mean	8.2	4.8	4.3	5.0
Std. Dev.	2.3	3.5	2.2	3.8

To carry out the VAR approach, the time series data first requires it to be tested for stationarity. All variables need to be level stationary (I(0)) or first difference stationary (I(1)). To perform the test for stationarity, each variable was tested for unit root specification using the Augmented Dickey Fuller Test (ADF). The ADF unit root test was used in all series in their levels and first differences.

ADF indicates that the series is integrated of order one, I(1), confirming the presence of a unit root or hysteresis in unemployment. Real GDP was level stationary or integrated of order zero, I(0), while Core Inflation and Interest Rate were also both difference stationary I(1) which is similar to that of unemployment. This suggests that the three variables constitute a unit root process (non-stationarity). It means that their mean, variance, and covariance are independent of time. Now that the variables are now I(0) or I(1), we can proceed with the remaining steps of the model.

After testing the variable for stationarity, it was followed by the selection of the optimal lag length. Then, note that the VAR models are based on variables optimal lags. Finally, the results are presented using the impulse response functions (IRF) and forecast error variance decompositions (FEVD).

The optimal lag length ρ was computed through different specifications since it is not derived from theory. For such, we used different information criteria such as the Final Prediction Error (FPE), Akaike Information Criterion (AIC), Hannan-Quinn Information Criterion (HQIC), and the Schwarz Information Criterion (SIC). For the period 1998Q1 to 2019Q3, the FPE and AIC indicated an optimal lag length of 4 while the HQIC indicated 1. As for the SBIC, it selected an optimal lag length of 0. Choosing an optimal lag length of 0, however, we cannot proceed with a VAR model as impulse forecast functions will not be able to be obtained while the variance decompositions that will be generated would be insignificant. Hence, instead of going with the widely used SBIC, this study employed an optimal lag length of 1 selected by the HQIC. As for the FPE and AIC, they were not chosen because longer lag lengths meanwhile lead to a greater loss in

degrees of freedom. So with a minimum value of -0.18192 in the HQIC criterion, a lag was found sufficient.

Next is the impulse response analyses of the VAR model which shows the impact of exogenous changes of the variables on the long-run equilibrium in our baseline specification. Figure 1 shows the impulse response functions (IRF) of the variables within a period of 30 quarters. The IRF exhibits how one variable responds to a one-time shock from each of the variables included in the system. The concern of this study is the graphs that exhibit the behavior of each explanatory variable, namely, the response of (1) unemployment from its own time-shock, (2) GDP from a one-time shock in unemployment, (3) inflation from a one-time shock in unemployment, (4) interest rate from a one-time shock in unemployment, (5) unemployment from a one-time shock in GDP growth, (6) unemployment from a one-time shock in core inflation, and (7) unemployment from a one-time shock in interest rate.

1. Response of unemployment from its own one-time shock

A significant positive effect was initially induced by a one-time shock in unemployment to itself (see Figure 1). However, it lasted very shortly and stabilized after only 8 quarters. Albeit, this still supports the idea that past unemployment is explanatory of the present unemployment situation as the effects of a one-time shock in the variable was great in magnitude and consistent with the result of the forecast error variance decomposition where unemployment held the greatest contribution in its own shock variance.

2. Response of GDP growth from a one-time shock in unemployment

Concerning GDP growth as the response variable (see Figure 1), the effect of a one-time shock in unemployment had a very weak influence and barely deviated from zero. Even so, the effect was positive and lingered for 17 quarters, twice longer than the effect on unemployment did.

Fig. 1. Impulse Response Function

Graphs by irfname, impulse variable, and response variable
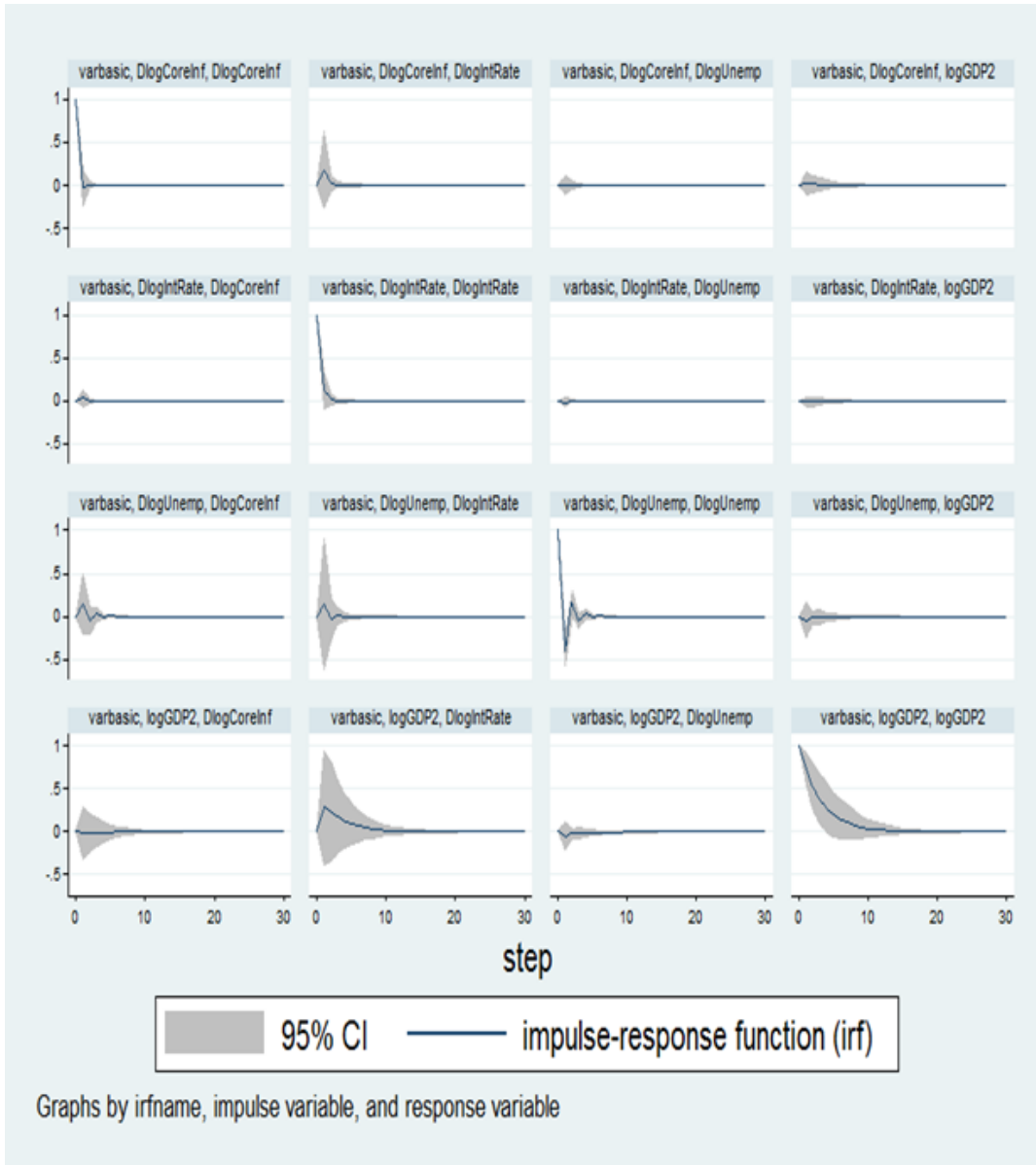
3. Response of core inflation from a one-time shock in unemployment

Similarly, the effect of a one-time shock in unemployment to core inflation (see Fig. 1) is minimal and exhibited an even less significant behavior in the response variable. Although very small in percentage, the response was mostly positive despite its fluctuating nature that stabilized within 9 quarters.

4. Response of interest rate from a one-time shock in unemployment

Fig. 1 also shows that the interest rate exhibited a positive reaction to a one-time shock in unemployment. The effect of the shock to the variable induced small fluctuations and appeared to smoothen out as early as the third quarter though it did not entirely disappear for another twelve quarters.

5. Response of unemployment from a one-time shock in GDP growth

Moving on to unemployment as the response variable, unemployment exhibited a significant negative behavior in response to a one-time shock in GDP growth even when it already started to have an upturn by the second quarter. This increasing trend carried on for 21 quarters until the effect reverted to 0.

6. Response of unemployment from a one-time shock in core inflation

Meanwhile, the effect of a one-time shock in core inflation to unemployment is quite similar to that of a one-time shock in GDP growth as the effect was negative throughout until it stabilized. This time, however, the percentage deviation is even smaller and disappeared in just 10 quarters.

7. Response of unemployment from a one-time shock in interest rate

As for the interest rate as the impulse variable, the preliminary effect of its one-time shock to unemployment is negative but fluctuated and eventually became positive in the following periods. This trickled out within 14 quarters.

All these results imply an inverse relationship between unemployment and each of the three other variables.

Table 2 reports the average variance decomposition of the VAR models which reports the 30-quarter forecast horizon. About 99.28% of the fluctuations in unemployment were brought about by its own innovation or shock, accounting for almost the entirety of its forecast error variance and leaving the other variables with little significant contribution.

Table 2. Average Variance Decompositions Model

Variables	Variance Decompositions			
	DUnemp	GDP	DCoreInf	DIntRate
DUnemp	0.9928	0.0008	0.0064	0.0014
GDP	0.0036	0.9956	0.0056	0.0153
DCoreInf	0.0002	0.0010	0.9843	0.0086
DIntRate	0.0034	0.0026	0.0037	0.9747

GDP growth contributed about 0.36%, followed by interest rate with 0.34%, and core inflation least contributed with only 0.02% of the forecast error variance in the movement of unemployment. The results correspond to the impulse response functions and provide more strong evidence that shocks absorbed by past values of unemployment directly impact its present.

With respect to the changes in the movement of GDP growth, very little is attributed to unemployment having only a 0.08% effect. The biggest percentage of the variance decomposition in GDP growth comes from its own shock as well with a 99.56% share. Consequently, shocks to core inflation and interest rate were left with residual effects on GDP and account for just 0.10% and

0.26%, respectively, to its variations.

Meanwhile, the source of fluctuations in core inflation is decomposed of: 0.64% from unemployment, 0.56% from real GDP, 0.37% from the interest rate, and 98.43% from its very own shock. Not surprisingly, core inflation also accounts for the highest percentage of its own forecast error variance and is followed by the contribution of the innovations in unemployment then GDP and, lastly, interest rate. All the variables had a more significant contribution on the variance decomposition of core inflation compared to the first two variables.

Moreover, for interest rate only 0.14% of its fluctuations resulted from innovations in unemployment, 1.53% was accounted to GDP growth, 0.86% to core inflation, and most importantly, 97.47% to its own shock. Own innovations still served as the greatest contributor to the forecast error variance for interest rate which is similar to the rest of the variables. Second to interest rate, GDP growth posed the next significant contributor to the variations in interest rate, followed by core inflation and unemployment, respectively.

Based on the results of the forecast variance decompositions of the VAR model, we arrive at the following conclusions:

(1) All the variables aside from the previous unemployment had weak influences on the behavior of unemployment with core inflation having the least effect. Though also subtle, the effects of GDP growth and interest rate were more apparent.

(2) The main sources of fluctuations in the movements of all the variables were their "own" shocks which always comprise the highest percentage in the forecast error decomposition.

(3) Unemployment rate had very little effect on the real GDP variable whereas, on core inflation and interest rate, it had a stronger and more significant influence on the shock variance.

V. Conclusion

This study analyzed the history and level of growth of the unemployment variable along with its other macroeconomic determinants using the vector autoregressive (VAR) model. Analyses were made to determine if impacts resulting from one-time economic shocks persist.

As determined by the ADF test, unemployment in the observed period failed to reject the null hypothesis of stationarity and confirmed the presence of a unit root. This suggests that the persistence of high unemployment is indeed accounted for by its past values. In other words, unemployment does constitute a hysteretic nature or does not return to its long-run average level.

Upon analyzing the impulse response functions (IRF), the effects on unemployment brought about by shocks of its explanatory variables and unemployment itself were short-lived. Although all were temporary, it took the longest for unemployment to recover from the shock of GDP growth, followed by interest rate, core inflation, and lastly from its own shock. Despite recovering the fastest from its own shock, unemployment induced the greatest change in its own behavior. The results of the FEVD proved consistent with the IRFs as it indicated that unemployment holds the greatest percentage contribution to its forecast error variance in the observed period, followed by GDP growth, interest rate, and then core inflation with smaller fractions. Other than its own shocks, the shocks of the endogenous interest rate and GDP variables were the ones that had a more critical and direct impact on the unemployment in the country. This implies that a large part of the effects of unemployment could still be derived from the development of growth accounting factors, as well as from the liquidity levels of the economy, influenced by the interest rates. For this reason, aside from taking on proactive formulation of labor market programs, policies and reforms geared toward these two variables also can be useful tools in addressing the problem of unemployment in the Philippines.

Other than endogenous shocks, however, exogenous shocks in the labor market such as the depreciation of human capital, advancement of technology, and lack of job opportunities should also be given attention to as another potential cause of the persistence of high unemployment level in the Philippines and should be opened for

further investigation. Moreover, since this study focused on aggregate unemployment, shifting the focus on unemployment by sector or by industry is recommended for future studies to give a more precise understanding of unemployment in the country. Expanding the covered years of the dataset will also be useful to address restrictions of longer optimal lag lengths. Furthermore, it is recommended that non-linear and quantile unit roots tests be explored to include structural breaks in the model and consequently increase the statistical power of the econometric procedure.

Currently, the Philippines is facing an ongoing global pandemic that has already caused several businesses to close and experience colossal losses; thus, resulting in the rise of unemployment. It is worth noting, therefore, that the significant findings of this study should be utilized by policymakers in stabilizing the possible severity of unemployment soon after the crisis has passed. Moreover, through this, exogenous shocks that have not been covered by this study but nonetheless contribute to the persistence of unemployment can be considered for further empirical investigation.

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The Effect of Foreign Aid on Governance in Developing Countries

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ABSTRACT

Purpose – This paper studies the effect of foreign aid on the quality of governance in developing countries. Since the results on the effect of foreign aid on governance are often ambiguous, conflicting, and inconclusive, the objective of this study is to contribute to the existing literature by finding rigorous, systematic, and comprehensive assessments of the relationship between foreign aid and governance.
Design/Methodology/Approach – We applied the system-GMM estimator and examined the panel data of 65 countries to provide empirical evidence over the period 1996-2016.
Findings – Our findings provide evidence of a significant and positive effect of foreign aid on overall governance. While estimating the effects of aid on each of the six dimensions, we also find positive signs in all models, but they are not significant in all cases.
Research Implications – The findings of this study imply that different dimensions of governance respond to aid differently. The empirical results of our study have important implications for both the donors and recipients of foreign aid. The paper suggests that policy actions oriented to the strengthening of good governance should get priority, as our results confirmed the effectiveness of aid in improving the quality of governance; improved governance may also positively impact the other macroeconomic indicators of recipient countries.

I. Introduction

The effectiveness of aid strategies is going through fundamental reassessment by the governments, multilateral institutions such as the World Bank and IMF, and bilateral donors such as USAID. It is argued that aid becomes more effective in countries with the presence of relatively good governance. In line with this argument, the strengthening of good governance in developing countries has become one of the central objectives of providing foreign aid by industrialized nations (Dollar & Levin, 2006; Hoebink, 2006; Hout, 2007; Kaya & Kaya, 2020; Ouedraogo, Sourouema, &

Sawadogo, 2021). Here, the strengthening of good governance may imply the overall improvements of different governance indicators such as voice and accountability, political stability, government effectiveness, regulatory quality, rule of law, and control of corruption.

Foreign aid has the potential to improve governance, but it may also adversely affect governance improvements. On the positive side, aid can help strengthen the rule of law and curb corruption in the recipient countries by inducing them to reform laws, set rules and conditions. Aid may also contribute to reducing corruption by the direct support to anti-corruption efforts. More generally, if foreign aid succeeds in improving the simple and composite socio-economic indicators of a country, people will be more interested in democratic norms as a system of political decision-making. This will ultimately lead to achieving good governance.

On the other hand, critics claim that large aid flows might also hinder governance improvements through weakening government accountability, undermining institutional quality, encouraging rent-seeking and corruption, and sustaining authoritarian regimes. A large portion of foreign aid to developing countries may end up in the pockets of corrupt bureaucrats and politicians. It can also be used for importing unsuitable technology or may just be misused.

The effect that foreign aid has on governance is a debatable issue, as the literature documents both a positive and negative relationship. This study is an attempt to contribute to the existing literature by finding rigorous, systematic, and comprehensive assessments of the relationship between foreign aid and governance. Applying the system-GMM (Generalized Method of Moments) estimator, the study examines panel data at five-year intervals from 1996-2016 from 65 countries to provide empirical evidence. The remainder of the paper is structured as follows. Section 2 presents a brief review of the current literature related to the aid-governance relationship. Section 3 describes the proposed methodology and data used in the study. Section 4 provides the main empirical results and examines the robustness of our findings.

Finally, section 5 concludes and outlines some recommendations to guide policy and practice.

II. Literature Review

The empirical studies on the effect of foreign aid on governance are inconclusive. While some researchers find a positive link between aid and governance, others record the opposite.

Goldsmith (2001) found small positive relationships between aid and governance. Dunning (2004) demonstrated the empirical evidence of a small but positive effect of foreign aid on democracy in Sub-Saharan African countries. Using Kaufmann et al.'s six dimensions of governance, Ear (2007a) found mixed evidence of aid-governance relationship. While rule of law accounted for a negative relationship with aid, voice and accountability have a positive relationship with aid. Lemi (2008) studied a sample of 44 African countries and found the positive and significant effects of official development aid (ODA) on governance. Quazi and Alam (2015) studied a sample of 14 countries of South Asia and East Asia to estimate the impact that foreign aid has on the quality of governance. They reported a positive effect of multilateral aid on the quality of governance, while the effect is either negative or insignificant in the case of bilateral aid. Alam and Quazi (2016) investigated the aid-governance relationship on panel data of 20 Latin American countries over the period 1996-2014. Not only the composite measure of governance, but also each of six individual dimensions of governance is positively impacted by foreign aid. Dadasov (2017) analyzed bilateral and multilateral data to empirically expose the effect of European aid flows on the quality of governance in aid recipient countries. The evidence of the study revealed that bilateral aid from the largest European donors does not show any impact, while multilateral financial assistance from the EU Institutions contributes to promoting good governance in aid recipient countries. Dijkstra (2017) reported that the negative effects of aid on governance are much exaggerated in the literature. Yahyaoui and Bouchoucha (2019),

Kaya and Kaya (2020), and Ouedraogo et al. (2021) confirmed the effectiveness of aid in countries with a good quality of governance.

Bräutigam and Knack (2004) found that high aid level is linked to the deterioration of governance in Africa. Rajan and Subramanian (2007) demonstrated that foreign aid is associated with weak governance and governance-dependent industries of aid recipient countries that grow very slowly. Busse and Gröning (2009) noted that an increase in aid undermines governance quality, arguing that high levels of aid associated with rent-seeking and moral hazard problems could hinder domestic reforms and worsen governance. The work of Kangoye (2013) confirmed that the high unpredictability of aid flows is linked to more corruption. Using data of 52 African countries for the period 1996–2010, Asongu and Nwachukwu (2016) revealed the negative effect of aid on economic governance (regulation quality and government effectiveness), while the effect is found to be insignificant in the case of political governance (political stability, voice, and accountability). Brazys (2016) studied the nonlinear relationship between aid and governance, arguing that the aid-governance relationship need not always be linear. The study finds a negative quadratic relationship between aid and growth. Qayyum and Anjum (2019) found that aid and quality of governance to be negatively related. They considered the role of both internal and external conflict, as the quality of governance may worsen when the aid recipient country suffers from conflict- irrespective of its type whether it is internal or external.

In'airat (2014) explored whether aid allocation depends on the quality of governance in recipient countries. The study found that donors give preferential treatment for the aid allocation to the countries with good governance. While Dadasov (2017) argued that source does matter for the positive or negative outcome of foreign aid, Feeny, Hansen, Knowles, McGillivray, and Ombler (2019), Fielding (2014), and Mohamed, Kaliappan, Ismail, and Azman-Saini (2015) argued that the impact of aid rather depends on the absorptive capacity of the recipient countries. Asongu and Nnanna (2019)

demonstrated that foreign aid instability strengthens governance standards in recipient countries. They argued that in the presence of aid volatility, taxpayers may be willing to pay more taxes if better governance exists. Chowdhury, Ariff, Masih, and Ismail (2019) articulated the negative effect of aid on the quality of governance, further revealing that the negative effect is relatively greater in the countries with poor institutional quality. Our extensive review of literature also found country-specific studies based on time series data to explore the aid-governance relationship. Ear (2007b) studied the aid-governance relationship in Cambodia using Kaufmann et al.'s six dimensions and reported no positive impact of aid on governance in Cambodia. Sarwar, Hassan, and Mahmood (2015) employed the ARDL approach to explore the effect of foreign aid on governance in Pakistan and found that aid dependency undermines the quality of governance in the country.

Drawing from previous literature, there is no consensus found on the effects of foreign aid on governance. The results are often ambiguous and conflicting, which motivates us to undertake the current research imitative. The results may vary because of different data sources, time periods, regions, donors and recipient perspectives, and types of foreign aid (bilateral vs multilateral), etc. This study contributes to the current literature on the effects of foreign aid on governance, as we believe that focusing on a large set of data has merit. It applies the system-GMM (Generalized Method of Moments) estimator to examine panel data of 65 countries to provide empirical evidence over the period 1996-2016.

III. Methodology

1. Data Sources

This study uses the panel dataset of five-year intervals from 1996 to 2016. Therefore, the dataset consists of five points in time: 1996, 2001, 2006, 2011, and 2016. Following the works of Heckelman and Knack (2005), Feeny and McGillivray (2010), Williamson (2008), and Nwaogu and Ryan

(2015), we use data over five-year intervals to avoid dropping observations and diluting cyclical influences. We have a sample of 65 developing countries of African and Asia that are the major recipients of foreign aid in the world. Details on data sources and explanations are provided in Table 1. The data on governance indicators are obtained from the Worldwide Governance Indicators (WGI) database. This dataset is available from 1996 with some years of missing data. WGI breaks governance along six dimensions of Voice and Accountability, Political Stability, Government Effectiveness, Regulatory Quality, Rule of Law, and Control of Corruption. WGI data for six dimensions of governance are available for over 200 countries, which are scored on a scale from -2.5 to +2.5. The higher the score, the better the quality of governance. To assess the overall quality of governance, we compute a composite governance indicator (GOVcomp) by a simple average (without weights) of the six dimensions of governance. The data on all independent variables are generated from the World Development Indicators (WDI) of the World Bank.

2. Model Specification and Estimation Technique

The model employed for the study takes the following form:

$$GOV_{it} = \beta_0 + \beta_1 AID_{it} + \beta_2 Growth_{it}$$
$$+ \beta_3 TO_{it} + \beta_4 EDU_{it} + \beta_5 IND_{it}$$
$$+ \beta_6 INF_{it} + \beta_7 \ln POP_{it} + \beta_8 GovEx_{it}$$
$$+ \beta_9 Asiadummy_i + \varepsilon_{it}$$

Herein, subscript i stands for a country, and t denotes year. GOV_{it} is the dependent variable and denotes the governance indicators for country i in period t. GOV comprises six dimensions to measure the quality of governance, along with the composite governance index. We estimate the effects of aid on both overall governance and individual dimensions of governance because we hypothesize that different dimensions of governance respond to aid differently. The independent variable of interest is

foreign aid (AID), official development assistance as a percentage of GDP. Economic growth (Growth), trade openness (TO), education (EDU), employment in industry (IND), Inflation (INF), population (POP), and government expenditure (GovEx) are used as control variables. These control variables have been selected after careful review of the extant empirical literature. Since our sample covers 65 developing countries of African and Asia, we introduced a regional dummy variable (Asia dummy) in the model to capture the regional variation across regions. It takes a value of 1 in the case of Asian countries, and 0 in the case of African countries.

We expect a positive effect of economic growth (Growth) on governance, as economic prosperity could improve the quality of governance by providing necessary financial resources required (Bräutigam & Knack, 2004; Dunning, 2004; Ear, 2007a; Goldsmith, 2001; Knack, 2001). Trade openness is expected to influence governance positively because more open economies are likely to devote more resources to building good and effective institutions (Al-Marhubi, 2005; Bonaglia, Braga de Macedo, & Bussolo, 2001). Education level (EDU) has been included in the model as a proxy of human capital. We expect that human capital promotes governance quality since active and meaningful participation of educated people and civil society in decision making will help forge better governance (Busse & Gröning, 2009; Heckelman & Knack, 2005). We expect a positive relationship between employment in the industrial sector and governance since it fosters cooperation and economic performance by promoting better wages and working conditions. Inflation may be positively associated with the governance if the measures are tailored to efficiently address the issues of price uncertainty and ultimately improve the quality of governance. The relation would be negative otherwise (Asongu & Nnanna, 2019). A priori, the effect of population on governance, could be positive or negative. It could be positive if economies of scale are associated with the establishment of effective institutions, and thus improve the quality of governance (Bräutigam & Knack, 2004; Ear, 2007a; Knack, 2001). On the

other hand, financial mass, information asymmetry problems, and higher transaction costs may disturb the improvement of governance in countries with large population sizes (Busse & Gröning, 2009). The effect of government expenditure on the quality of governance improvements remains ambiguous. Efficient and responsible public expenditure would induce positive results and negative otherwise.

The literature holds that a simultaneous relationship between foreign aid and the quality of governance may exist (Brazys, 2016; Busse & Gröning, 2009; Ear, 2007a). We apply the system-GMM (Generalized Method of Moments) estimator to address this simultaneity/endogeneity problem, suggested by Blundell and Bond (1998). The system GMM controls for: (i) autoregressive endogeneity in the dependent variables by exploiting all orthogonality conditions between the lagged endogenous variable and error terms; (ii) simultaneity by instrumenting the regressors with the first lagged and first differences and (iii) time-invariant omitted variables with time fixed effects.

Table 1. Description of Variables

Variable	Description	Data source
GOVcomp	Composite governance index by a simple average (without weights) of the six dimensions of governance,	Author's calculations based on data from WGI
VA	Voice and Accountability: Reflects perceptions of the extent to which a country's citizens are able to participate in selecting their government, as well as freedom of expression, freedom of association, and free media.	WGI
PS	Political Stability and Absence of Violence/Terrorism: Political Stability and Absence of Violence/Terrorism measures perceptions of the likelihood of political instability and/or politically motivated violence, including terrorism.	WGI
GE	Government Effectiveness: Reflects perceptions of the quality of public services, the quality of the civil service and the degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies.	WGI
RQ	Regulatory Quality: Reflects perceptions of the ability of the government to formulate and implement sound policies and regulations that permit and promote private sector development.	WGI
RL	Rule of Law: Reflects perceptions of the extent to which agents have confidence in and abide by the rules of society and, in particular, the quality of contract enforcement, property rights, the police, and the courts, as well as the likelihood of crime and violence.	WGI
CC	Control of Corruption: Reflects perceptions of the extent to which public power is exercised for private gain, including both petty and grand forms of corruption, as well as "capture" of the state by elites and private interests.	WGI
AID	Official development assistance in the percentage of GDP	World Bank (WDI)
Growth	Gross Domestic Product growth rate (annual percentage)	World Bank (WDI)

TO	Total imports and exports of goods divided by GDP in percentage	World Bank (WDI)
EDU	Secondary school enrolment in percentage	World Bank (WDI)
IND	Employment in industry (percentage of total employment)	World Bank (WDI)
INF	Consumer Price Index (annual percentage)	World Bank (WDI)
ln POP	Log value of total Population	World Bank (WDI)
GovEx	Government Final Consumption Expenditure (percentage of GDP)	World Bank (WDI)
Asia dummy	A regional dummy variable that takes the value of 1 in the case of Asian countries, and 0 in the case of African countries.	

IV. Empirical Results

We estimated the empirical models applying both OLS and the System GMM estimator. Table 2 details the basic statistics of the variables used in this analysis. Our sample consists of 65 countries in the panel framework for the period of 1996-2016. The countries in the sample are the major recipients of foreign aid in the world.

Table 2. Descriptive Statistics of the Variables

Variable	Obs	Mean	Std. Dev.	Min	Max
GOVcomp	325	-0.606713	0.5635072	-1.9293540	0.7959211
VA	325	-0.6416225	0.6658277	-2.2375350	0.9438726
PS	325	-0.5738658	0.8851215	-2.6921300	1.2833880
GE	324	-0.5988562	0.6124465	-2.0886450	1.1205180
RQ	325	-0.5966346	0.6186618	-2.2443700	1.0266700
RL	325	-0.6194828	0.6181288	-2.0085070	1.0441880
CC	325	-0.6138892	0.5834615	-1.6728760	1.1599340
AID	321	6.574556	9.7800810	-0.0386478	100.1518000
Growth	318	4.671985	4.9147260	-27.9944400	35.2240800
TO	302	72.212530	38.8650400	0.0209992	270.3636000
EDU	280	49.125520	26.3835500	5.3218400	120.6316000
IND	325	15.703930	9.6816620	2.0710000	49.5590000
INF	289	81.592120	39.7372400	0.0125973	287.9641000
lnPOP	325	16.359750	1.6128680	12.4454100	20.9925700
GovEx	292	13.623820	5.3901510	1.16619600	40.8332200

The results from the OLS estimation with robust standard errors are presented in Table 3. In the presence of potential endogeneity, the results of the OLS estimation may be biased upwards. To tackle this simultaneity/endogeneity problem, we applied the system-GMM (Generalized Method of Moments) estimator to examine the effects that foreign aid has on governance. The system-GMM estimator is more efficient compared to the inconsistent OLS approach, as it controls for: (i) autoregressive endogeneity in the dependent variables by exploiting all orthogonality conditions between the lagged endogenous variable and error terms; (ii) simultaneity by instrumenting the regressors with the first lagged and first differences, and (iii) time-invariant omitted variables with time fixed effects

Table 3. Estimation Results (Pooled OLS)

Independent variables	Dependent variable: GOV						
	GOVcomp Model 1	VA Model 2	PS Model 3	GE Model 4	RQ Model 5	RL Model 6	CC Model 6
GOV (-1)	0.849*** (0.027)	0.810*** (0.037)	0.687*** (0.044)	0.842*** (0.031)	0.776*** (0.036)	0.852*** (0.028)	0.880*** (0.032)
AID	0.002 (0.001)	0.002 (0.002)	0.001 (0.003)	0.001 (0.001)	0.001 (0.002)	0.001 (0.001)	0.003* (0.001)
Growth	0.007* (0.003)	0.001 (0.006)	0.012 (0.009)	0.011** (0.004)	-0.001 (0.005)	0.004 (0.004)	0.009** (0.004)
TO	-0.001 (0.001)	-0.001 (0.001)	0.001 (0.001)	-0.001 (0.001)	0.001 (0.001)	-0.001 (0.001)	-0.001 (0.001)
EDU	0.001* (0.001)	0.001 (0.001)	0.004** (0.002)	0.001* (0.001)	0.001 (0.001)	0.001* (0.001)	0.001 (0.001)
IND	-0.001 (0.002)	-0.001 (0.003)	-0.007 (0.005)	0.001 (0.002)	-0.004 (0.003)	-0.001 (0.002)	0.002 (0.002)
INF	0.001 (0.001)	0.001 (0.001)	0.001 (0.001)	-0.001 (0.001)	-0.001 (0.001)	0.001 (0.001)	0.001 (0.001)
lnPOP	-0.001 (0.011)	0.016 (0.020)	-0.088*** (0.030)	0.014 (0.013)	0.035** (0.016)	-0.004 (0.013)	-0.013 (0.013)
GovEx	0.005* (0.003)	0.008* (0.005)	0.003 (0.007)	0.006 (0.003)	0.012** (0.004)	0.003 (0.003)	0.001 (0.003)
Asia dummy	-0.017 (0.036)	-0.058 (0.062)	-0.152* (0.087)	0.062 (0.043)	0.005 (0.052)	-0.029 (0.041)	0.017 (0.043)
Constant	-0.226 (0.218)	-0.498 (0.378)	0.989* (0.543)	-0.523* (0.264)	-0.900*** (0.314)	-0.106 (0.249)	-0.003 (0.257)
Observations	190	190	190	190	190	190	190
Countries	65	65	65	65	65	65	65

Note: Standard errors in parentheses; *$p<0.10$, **$p<0.05$, ***$p<0.01$.

Table 4. Estimation Results (System-GMM Estimation)

Independent variables	Dependent variable: GOV						
	GOVcomp Model 1	VA Model 2	PS Model 3	GE Model 4	RQ Model 5	RL Model 6	CC Model 6
GOV (-1)	0.901*** (0.156)	0.535*** (0.176)	0.739*** (0.174)	0.805*** (0.152)	0.692** (0.332)	0.982*** (0.135)	0.716*** (0.178)
AID	0.012** (0.006)	0.008** (0.004)	0.012 (0.015)	0.004 (0.004)	0.003 (0.011)	0.005* (0.002)	0.007* (0.004)
Growth	0.047*** (0.017)	0.048* (0.028)	0.062 (0.050)	0.019* (0.012)	0.005 (0.023)	0.038** (0.015)	0.046** (0.021)
TO	0.006** (0.003)	0.006* (0.003)	0.013** (0.006)	0.004 (0.002)	0.002 (0.003)	0.007*** (0.002)	0.004* (0.002)
EDU	0.011** (0.005)	0.016** (0.007)	0.020 (0.013)	0.009*** (0.004)	0.002 (0.003)	0.011** (0.004)	0.009** (0.004)
IND	-0.004 (0.016)	-0.016 (0.021)	-0.022 (0.031)	-0.006 (0.007)	-0.004 (0.018)	0.002 (0.014)	0.003 (0.011)
INF	-0.002** (0.001)	-0.002 (0.001)	-0.004 (0.003)	-0.002** (0.001)	-0.001 (0.001)	-0.002** (0.001)	-0.002* (0.001)
lnPOP	-0.033 (0.038)	0.033 (0.067)	-0.112 (0.086)	0.001 (0.032)	0.056 (0.042)	-0.069 (0.051	-0.042 (0.048)
GovEx	0.001 (0.011)	0.015* (0.008)	0.007 (0.020)	0.002 (0.009)	0.009 (0.012)	-0.008 (0.010)	0.006 (0.011)
Asia dummy	0.045 (0.142)	-0.266 (0.195)	-0.131 (0.311)	-0.012) (0.101)	-0.032 (0.087)	-0.157 (0.121)	-0.011 (0.109)
Constant	0.798 (1.713)	-0.675 (1.258)	2.471* (1.461	0.028 (0.569)	-1.398 (1.014)	1.614** (0.972	0.650 (0.816)
Observations	190	190	190	190	190	190	190
Countries[a]	59	59	59	59	59	59	59
Instruments	32	32	32	32	25	32	32
Sargan (p-value)[b]	0.974	0.614	0.954	0.192	0.157	0.988	0.770
AB 2 (p-value)[c]	0.139	0.914	0.451	0.115	0.198	0.131	0.940
Wald (p-value)	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Notes: 1. Standard errors in parentheses; *$p<0.10$, **$p<0.05$, ***$p<0.01$

2. [a]Since the inclusion of a large number of control variables increases the number of instruments enormously in the system-GMM estimation and the number of countries included in the analysis would decline.

3. [b]Sargan-test of overidentification.

4. [c]Arellano–Bond-test that second-order autocorrelation in residuals is 0; the first-order autocorrelation is always rejected (not reported).

The empirical results of the system-GMM estimations have been presented in Table 4. We estimated a total of seven regressions. The effect of foreign aid on the composite (overall) governance index (GOVcomp) is estimated in model 1 and the subsequent models estimate the effects on each of six dimensions of governance. We find the expected signs of aid coefficients in all models. The aid coefficient for the overall governance index is found to be positive and significant at the one percent level, providing strong evidence of aid-governance relation in a positive direction. We also observed that the aid coefficients for voice and accountability, rule of law, and control of corruption (VA, RL, and CC) are positive and significant. However, the effect on the rest three dimensions of governance (PS, GE, and RQ) are found to be positive, but statistically insignificant. This result implies that different dimensions of governance respond to aid differently.

Among the other explanatory variables, economic growth, trade openness, and education level are found to have positive and significant effects on the overall governance quality. These results are in line with the expected a priori signs. The effect of inflation is negatively significant on the composite governance index, implying that inflation measures didn't effectively handle the issues of price uncertainty. Government expenditure is positively related to the overall governance, but not significant. The effects of employment in the industrial sector on the quality of governance are found to be negative in most cases, which is in contradiction with the expected a priori signs. One possible explanation is that its effect on governance may be moderated by other variables. We also find a negative effect of population on the overall quality of governance, although it is not significant. Our sample consists of many of the world's top populous countries. The literature holds that the quality of governance is disturbed by financial mass, information asymmetry problems, and higher transaction costs in countries with large population sizes. Finally, we capture regional variation across regions by including a regional dummy in our regression. The coefficient of the Asia dummy is positive, but not statistically significant in the case

of the composite governance index. However, it is negative and insignificant while capturing the effect on each of the six dimensions of governance in the subsequent models.

Results for various robustness checks to confirm that the validity of the models is found satisfactory. The Sargan test investigates if the instruments are not jointly correlated with the error term in the equation of interest. Thus, accepting the null hypothesis of this test indicates that instruments are jointly uncorrelated with the error term. More clearly, the instruments as a group display strict exogeneity or do not suffer from endogeneity. Our result of the Sargan test of overidentifying restrictions suggests that the applied instruments are valid. The Arellano–Bond-test also does not reject the null hypothesis of no autocorrelation.

V. Conclusion

In this paper, we investigated the effect of foreign aid on governance. Our objective was to contribute to the existing literature by finding rigorous, systematic, and comprehensive assessments of the relationship between foreign aid and governance. We covered a large sample of panel data of 65 countries to provide empirical evidence over the period 1996-2015, as we believe that focusing on a large set of data has merit.

The main findings of our paper suggest that foreign had has a positive and significant effect on the overall quality of governance. We also find the positive sign of aid coefficients on each of the six dimensions. However, the effects are not significant in the case of political stability, government effectiveness, and regulatory quality (PS, GE, and RQ). This finding implies that different dimensions of governance respond to aid differently. Results for various robustness checks to confirm that the validity of the models are also found satisfactory. The findings have at least two policy implications. First, aid policy actions oriented to the strengthening of good governance should get priority, as our results confirmed the effectiveness of aid in improving the quality of governance and improved governance may also positively impact

the other macroeconomic indicators of recipient countries. Second, the government should consider the improvement of each dimension of governance since different dimensions of governance respond to aid differently.

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Impacts of Tax Structure on Productivity: A Laboratory Experiment

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ABSTRACT

Purpose – The study aims to investigate the impacts of tax structure - income tax versus wage rate tax - on the productivity of individuals by designing a laboratory experiment to look at the effects of different tax structures on the productivity of individuals.

Design/Methodology/Approach – The study measured the differences in productivity of students doing a real effort task by using three treatment groups: the control (or without tax) treatment and two tax treatments, where taxes were presented differently (wage rate tax or income tax) having the same real payoff. Participants were drawn from four different recitation classes at the University of the Philippines Los Baños. The study employed an Ordinary Least Squares regression analysis to assess the ability of tax structures to lessen the impacts of tax disincentive on the participants.

Findings – The study shows that there is a significant difference in the productivity of individuals faced with an income tax and those faced with a wage rate tax. Moreover, older individuals and those who have greater difficulty with the task demonstrate increasing productivity while individuals who have prior knowledge of the task appear to have lower productivity.

Research Implications – Various tools and experimental approaches are required in looking at the framing effects in tax. It is also suggested that one should examine the errors done during the task given a possible "experimenter's bias", since there is an apparent increase when presented with tax. Such errors may have implications for an employee's work quality. Hence, future studies may wish to consider alternative ways to deal with these issues.

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I. Introduction

One of the ten principles of economics, according to Mankiw (2012), states that people respond to incentives and that individual behavior tends to deviate when benefits change. People are induced to perform better because of the varying incentives that they are given, and individuals respond to incentives differently depending on their preferences. In an employer-employee situation, incentives can be translated to wages. The wages of the workers are taxed depending on the tax policies of the government in the economy. Taxation is important in every economy that aims to sustain and develop the country. According to Arkani (2010), some of the roles of taxation in the economy are the improvement of social welfare, reduction in inequalities of income, and mobilization of resources. In the Philippines, personal income taxes account for the second-largest taxed category, according to the Bureau of Internal Revenue (2015).

Using a laboratory experiment, this study attempts to add to the growing literature relative to the impacts of tax structure on the productivity of individuals.

II. Review of Literature

Despite the importance of taxation on the revenue generation of an economy, taxes may have negative effects. Taxes may create disincentives for workers to be more productive and may also reduce workers' payoffs for working. Furukawa (n.d.) stated that taxes are assumed to generally decrease work effort. Dalamagas and Kotsios (2008) argue that tax reduction should be considered to increase incentives to work. This, however, may lead to a lack of budget for the country to maintain and implement projects. In the Philippines, taxes account for a large amount of the country's budget. Thus, a reduction in tax rates may yield greater risks for budget deficits (Leachman & Mazerov, 2015). Tax policies affect the economic choices of individuals (Gale & Samwick, 2014). According to Fochmann, Kiesewetter, Blaufus, Hundsdoerfer,

and Weimann (2010a), it is caused by the biased perception in terms of tax burden which ultimately leads to the distortion of economic decisions. Cognitive biases exist in humans, leading to the distortion of decisions. Since there are inconsistencies with individuals' ways of thinking, tax perception may be used as a tool to open opportunities to alleviate the negative effects of a tax on workers.

Based on empirical studies in behavioral economics, lessening the disincentive of a tax may be possible through nudging. This term was defined by Thaler and Sunstein (2008) to be "any aspect of the choice architecture that alters behavior in a predictable way without forbidding any options or significantly changing their economic incentives" (Egan, n.d.). With this concept, tax architecture should also be given attention to lessen the negative effects of a tax. Altering the tax structure may have significant effects on the productivity of workers. Presenting a taxed wage structure biased to the cognition of individuals to work may yield more productive workers. In a study by Weber and Schram (2014), an income tax and a wage rate tax have differences in terms of performances and effects despite being equivalent tax structures. These two structures, most used across the globe, yield the same real payoff for workers given the same tax policy. Primarily, an individual who is presented with a different tax structure but has the same real payoff should not alter the laborer's work patterns, as the real net benefits do not change. This may be inferred from classical economic theories, yet the concept of money illusion ultimately creates an opportunity for tax structure to alter the behavior. Money illusion refers to the tendency to think in nominal terms rather than in real terms (Miao & Xie, 2012). The tendency creates an opportunity for alterations in the tax structure to lessen the negative effects of the taxes.

1. Taxes as Disincentives to Workers

According to Landsburg (1995), there is significant evidence that people still respond to incentives even in situations where the behavior seems irrational. This shows how powerful

incentives can be. However, taxes are proven to be a disincentive for individuals to work, as it decreases their payoff. Income tax is regarded as a major disincentive for work. In theory, however, two effects emerge from the income tax: a substitution effect and an income effect. The existence of taxation is theoretically equivalent to a decrease in the wage rate. An income effect is present in maintaining the level of income by working more; a substitution effect is present in substituting work for leisure since the opportunity cost of work is lower. If the substitution effect was higher, there would be a decrease in the labor supply. Nevertheless, it has been empirically shown that income tax is generally assumed to decrease overall work effort (Furukawa, n.d.).

Dalamagas and Kotsios (2008) investigated the implications of an exogenous increase and a decrease in the income tax schedule. They considered the general equilibrium model for employees and self-employed workers. In an increase in the marginal income tax rate, there are significant negative effects on hours worked per self-employed worker. The study is true in all of the four countries that were examined. However, a study on income tax rate increases in France showed that it provided a positive response. The authors said that the lack of withholding tax provisions and the identifiable tax-induced reduction in income gave rise to a more dominant income effect.

2. Perception on Taxes

Available literature states that, generally, individuals' perception of taxes makes people deviate from rational economic decisions and make them more susceptible to change. This perception of taxes determines the gravity of the effects of taxes on individuals. Fochmann et al. (2010a) studied tax perception through a survey of experimental literature on the perception of individuals with taxes, concerning their own tax burden and their effects on economic decisions. The authors stated that there was a biased perception in terms of the tax burden, thus, distorting individuals' economic decisions. According to the authors, six strands of

literature affect individuals, which were discussed in their study: perception of marginal tax rates, the influence of tax complexity on tax perceptions, taxation and incentives to work, tax salience, tax morale and fairness, and money illusion.

Fujii and Hawley (1988) surveyed the difference between the perceived and computed actual marginal federal income tax. The authors concluded that there is a difference between their perception of the taxes they are paying and the actual marginal tax rates they are paying. Taxpayers, in general, underestimate marginal tax rates by three percent. Fochmann et al. (2010a) also stated that there is empirical evidence that the perception of an individual's marginal tax rate is not always correct. In terms of the perception of marginal tax rates, Fochmann et al. (2010a) revealed in a survey of empirical studies inconsistencies with past studies, yet the majority of the studies reveal misperceptions in several studies using different methodologies. These inconsistent results, according to the authors, are because of the complexities of the tax in the countries analyzed: tax reforms, the different econometric models, gender effect, and the sample size.

The argument of misperception is also supported by Blaufus, Bob, Hundsdoerfer, Kiesewetter, and Weimann (2010) through their empirical study on tax perception. The authors studied the effects of the change in tax rate and tax base on the perceived burden. Using interviews as their mode of surveys, evidence from Germany considers the income tax rates. Interviewing a thousand people, the authors asked to estimate their income tax rates and their perception regarding the fairness of taxes. The study showed that taxpayers tend to deviate from the actual and objective tax rate (Blaufus, Bob, Hundsdoerfer, Sielaff, Kiesewetter, & Weimann, 2015).

3. Productivity Responses to Money Illusion and Tax Structure

Labor supply is more reactive to a labor tax than to an equivalent consumption tax (Fochmann et al., 2010a). This creates more opportunities for researchers to study the productivity of workers,

where productivity is measured as the output per time. Several experimental studies examined the impacts of taxation and the incentives to work. An experiment revealed that labor supply is less affected in income than in consumption. However, increasing the gross wage yields a higher labor supply (Fochmann, Weimann, Blaufus, Hundsdoerfer, and Kiesewetter, 2010b). A study by Fochmann et al. (2010b) connected money illusion and wages. The controlled real experiment was to have the same real wages, given different nominal wages with corresponding tax rates. Authors measured productivity with the number of pieces produced and the time spent and tested whether the presentation of wage rates has significantly different productivity effects. The wage rates were set in different treatments: 9 cents with 0 tax (reference group), 12 cents with 25% tax, and 18 cents with 50% tax. The study then concluded that productivity is significantly higher without the tax, which decreased by almost half when given with tax. Also, the study concluded that different wage rates had significant effects on productivity, coining the term "gross-wage illusion" (Fochmann et al., 2010b).

Tax structure alterations may also have significant effects on workers because of the framing effect, which is present where choices are worded or presented differently, leading to changes in their relative attractiveness of choice (Samson, 2014). Hossain and List (2012) stated that a simple framing manipulation increased productivity, which was only caused by the change in the language of the contract. Weber and Schram (2014) studied the framing effects of equivalent taxes and argued that the tax structures are equivalent and should be ignored. They looked at the labor supply for the two most prevalent tax structures: income tax and payroll or wage rate tax. It is said that income tax is levied more on the employees, and the payroll tax is levied more on the employers. Looking at the different tax structures and liability, it is said that an income tax induces a higher willingness to participate in the labor market than the wage rate or payroll tax. Moreover, the income tax tends to have a higher labor supply or hours worked compared to the payroll tax. With all the literature presented,

there is still much to research on tax structure alteration effects on workers' productivity.

Using inputs from the relevant studies, this study focuses on lessening the negative effects of taxes by using framing effects in the form of tax structure alterations by examining the effects of tax structure on productivity. Specifically, this study hopes to determine whether individuals presented with an income tax and those presented with a wage rate tax have differences in productivity. In addition, this study aims to determine other socio-demographic characteristics and economic variables that affect productivity. This study will be significant to employers who want to lessen the negative effects of taxes on their workers. In an employer-employee situation, altering the tax structure will not incur costs for the employers as it may nudge the workers to be more productive and, by doing so, would provide more efficiency from the incentive.

III. Methodology

Taxation has proved to have negative effects on work for individuals, as it decreases their payoff and incentive to produce more. However, with the opportunity that the money illusion provides, this study looked at the effects of tax structure on productivity. The study looked at two tax structures and their ability to lessen the tax disincentive on workers. This study also validated other factors related to an individual's productivity. To simulate a real effort task in a classroom setup, this study experimented on the productivity of individuals under three treatments: the control treatment, the income tax treatment, and the wage rate tax treatment (Fig. 1). Participants answered a questionnaire regarding their socio-economic demography and their perception of the task.

The experiment was conducted in four different classes at the University of the Philippines Los Baños. One random recitation class from each of the four lecture sections of Econ 11 (General Economics) was chosen to be part of the study, as the selected sample provided more heterogeneity among the participants. All of the classes first performed the control treatment. Afterward,

Fig. 1. The Flow of the Treatments
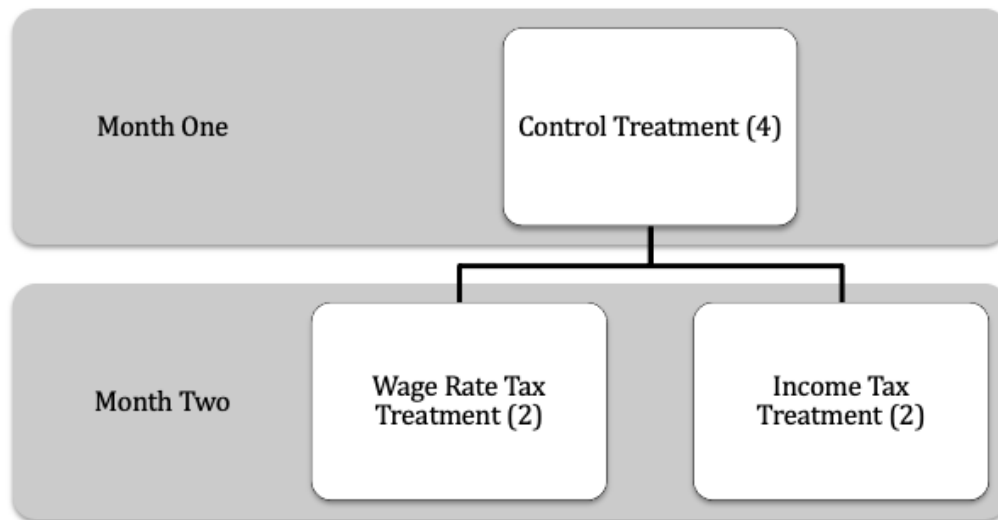
two were assigned to perform the wage rate tax treatment, while the other two were assigned to perform the income tax treatment. Treatments were a month apart, as shown in Figure 1, to lessen the impacts of the learning effect that might occur in the course of the study. To simulate a real task experiment, participants checked sets of quizzes (Appendix A), with each quiz containing twenty items in multiple-choice form. Using an answer key (Appendix B), participants must check the quizzes whether the answers are correct or wrong; after which, they must put the total number of correct answers on the quiz. A correctly-checked quiz then corresponds to one unit of output for the participant. For each treatment, participants were given ten minutes to complete each round.

In the control treatment, where all of the participants first took part, they did the task with a payoff of two pesos per correctly checked quiz, presented without tax. In the tax treatments, namely the income tax treatment and the wage rate tax treatment, participants' payoffs incurred a 25% tax; thus, the real pay-off is at Php 1.50 (U.S. $0.03) per output. The presentations of participants' wages were different for the two tax treatments. To remove the presenter's bias, an audio-visual presentation was used and was shown at the start of each treatment to show instructions and present the respective payoffs. In the first part of the video, the general instructions were given; they had to check the quizzes and put the score in the box at the upper right corner of the paper. The next part of the video featured the payoff to be received. In the tax treatments, they were randomly assigned whether they are receiving a wage rate tax or an income tax. Moreover, a graphical presentation of the tax structure was used to aid the participants in understanding the tax system assigned to them.

After the experiment, participants answered a questionnaire (Appendix C) that contained socio-demographic and economic factors and the participant's preferences. The questionnaire contained questions on participants' demographics that were relevant and applicable to students, e.g., age, sex, whether the individual has worked as a student assistant, and the number of semesters enrolled in college. This study also looked at the economic factors relevant to task productivity, which included allowance or income and the treatment. Also, the questionnaire aimed to look at the perception of individuals on the task. Considering the perceived difficulty and perceived

interest, the questions on perception were in a yes or no format.

1. Experimental Design

To test an individual's response to the disincentive of tax and the tax structure, the experiment was based on the participant's output. Their output corresponded to the number of correctly checked quizzes with only ten minutes to produce such output. In the control round, the payoff is equal to the correct output or the number of rightly checked quizzes. The payoff corresponded to a two-peso return to the participant. The equation is:

$$payoff = (2)correct\ output \qquad (1)$$

For the tax structure round, the equations vary for each treatment, but the real wage is still the same. The tax treatments were presented differently but ultimately both treatments were given a real payoff of Php 1.50 (U.S. $ 0.03) per correct output, where the equation is defined by:

$$payoff = (1 - tax\ rate)correct\ output \qquad (2)$$

The treatment round comprised of the wage rate tax treatment and income tax treatment. Applying the money illusion, the gross representations of the tax structures were different, but ultimately the real payoff is the same. For the wage rate treatment, the payoff was adapted from the equation of Blomquist (1984), which is denoted by Equation 3 as:

$$payoff = output(2)(1 - 0.25) \qquad (3)$$

Under the income tax, the tax was presented differently to the group, as denoted by Equation 4:

$$payoff = (2(output))(1 - 0.25) \qquad (4)$$

2. The Model

Tax creates a disincentive for people to work harder. In determining whether which tax structure lessens the tax disincentive, the study examined the difference between the two treatments that the individual had participated in, the control treatment, and the tax structure treatment. To test the difference between the two tax structures, the Ordinary Least Squares regression model was used. It would also test other variables if they have significant impacts on the individual's behavior to deviate because of the tax. The formula is defined as follows:

$$\begin{aligned} DiffProductivity = {} & \beta_0 + \beta_1 TaxStructure \\ & + \beta_2 Age + \beta_3 Sex \\ & + \beta_4 Semesters \\ & + \beta_5 StudentAssistant \\ & + \beta_6 Allowance \\ & + \beta_7 Difficulty \\ & + \beta_8 Interest + \mu \end{aligned}$$

Where:

DiffProductivity is the difference in output between the treatments, the control treatment (subtrahend) and the tax structure treatment (minuend) that the individual is part of;

TaxStructure is the dummy variable for the tax structure used; 0 if Wage Rate Tax and 1 if Income Tax;

Age is the current age of the participant;

Sex is the dummy variable for the sex of the respondent; value will be 0 if female, and 1 if male;

Semesters is the number of enrolled semesters throughout the student's stay at the university;

StudentAssistant is the dummy variable whether the individual has worked as a student assistant; value will be 0 for no, and 1 if yes;

Allowance is the amount of daily allowance of the respondent;

Difficulty is the dummy variable for the perceived difficulty in the activity; value is 0 for perceiving it not difficult, 1 for perceiving it as difficult;

Interest is the dummy variable for the interest in the activity; value is 0 for not interested and 1 if the participant is interested.

The study used Ordinary Least Squares to prove the statistical significance of the variables. Having a statistically significant result for the tax structure

proves differences in productivity, thus, the tax structure yields different effects. Also, a student's t-test is used to verify the differences in the tax structure. The other variables, being significant, prove and disprove consistencies with past literature.

IV. Results and Discussion

In doing the research methodology, which stems from behavioral and experimental economics, significant results were found. The study conducted proved that tax structure significantly altered the tax responses of individuals. Between the two prominent tax structures in the world (Weber & Schram, 2014), income tax and wage rate tax, individuals are more responsive to the income tax structure. Additionally, three other variables were found significant in affecting the productivity of the individuals.

1. The Experiment and the Treatments

The experiment was conducted in four different classes in Econ 11 (General Economics), one from each of the four lecture classes at the University of the Philippines Los Baños. The classes were Econ 11 sections E-5R, U-6R, C-7R, and W-7R. The sections selected provided heterogeneity among the participants for the research to be generalized. Despite being a course offered by the university's College of Economics and Management, which also prioritized students of the college, the sample showed that out of 81 respondents, only 16 or 19.75% of the participants are from the said college; and only six were economics majors or 7.4% of the participants. The rest were from other colleges in the university. Also, the participants were aged from 16 to 22 years old and had a daily allowance ranging from Php 20 to Php 1500 (U.S. $0.40 to U.S. $30).

The control treatment experiments were done in February 2016. The tax structure treatments were conducted exactly four weeks after. The Econ 11 sections E-5R and C-7R were assigned to the wage rate tax treatment, while the sections U-6R and W-7R were assigned to the income tax treatment. Meanwhile, the tax structure treatments were done in between treatments for the four classes: two classes were assigned to participate in the wage rate tax treatment, while the other two were assigned to participate in the income tax treatment. Since eligible samples should have participated in both treatments, the research had a total sample size of 81 with the wage rate tax treatment having a sample of 36 students, and income tax having a sample of 45 students. Table 1 shows that there is an apparent decrease in the outputs for the wage rate tax group, between the control treatment and the tax treatment. The income tax group, however, had an increase in output. Errors had increased overall from having a mean of 2.90 to 4.52.

Table 1 also shows the characteristics and perceptions of the individuals in the experiment. Between the two treatments, the samples relatively had the same socio-demographic characteristics. Using the student's T-test, the means of variables age, allowance, and semesters (the number of semesters enrolled in the university) did not have significant differences (refer to Appendices D, E, and F for full t-test results of variables age, allowance, and semesters, respectively).

2. Tax Effects on Labor Productivity

For labor productivity, most of the participants had an increased output even with the tax imposition, which lowers the aggregate payoff. This means that their differences in productivity (DiffProductivity) were mostly negative (since it was computed as DiffProductivity = Control Treatment - Tax Structure Treatment). This is summarized in Table 2.

The dummy variable for the tax structure (TaxStructure) was found to be significant at 5%. Having a negative coefficient means that an average person in the income tax group had a lower difference in productivity as compared to the other group. Therefore, if income tax is presented instead of wage rate tax, the difference in productivity will decrease, implying that respondents will have a higher output level despite the imposition of a tax.

Table 1. Summary of the Results of the Experiment Conducted

Variable	Wage Rate Tax Group n=36	Income Tax Group n=45	Overall n=81
Control Treatment (Mean Output)	25.49	24.34	24.86
Tax Treatment (Mean Output)	24.47	25.23	25.23
Age (Mean)NS	17.94	18.16	18.06
Allowance (Mean)NS	271.25	213.62	239.23
Semesters (Mean)NS	3.72	4.38	4.09
Sex			
Female	28 (77.78%)	24 (53.33%)	52 (64.20%)
Male	8 (22.22%)	21 (46.67%)	29 (35.80%)
Employment as Student Assistant (SA)			
Not have been a SA	31 (86.11%)	37 (82.22%)	68 (83.95%)
Have been a SA	5 (13.89%)	8 (17.78%)	13 (16.05%)
Interest in the activity			
Not Interested	19 (52.78%)	28 (62.22%)	47 (58.02%)
Interested	17 (47.22%)	17 (37.78%)	34 (41.98%)
Difficulty of the activity			
Not Difficult	12 (33.33%)	15 (33.33%)	17 (33.33%)
Difficult	24 (66.67%)	30 (66.67%)	54 (66.67%)

Note: *Significant at 10%; **Significant at 5%; NS Not Significant.

Table 2. Summary of the Differences in Productivity in Tax Structure Groups

	Wage Rate Tax Group n=36	Income Tax Group n=45	Overall n=81
Positive Difference			
Count (Percentage)	15 (41.67%)	14 (31.11%)	29 (35.80%)
Mean	6	3.0714	4.5862
Negative Difference			
Count (Percentage)	17 (47.22%)	25 (55.56%)	42 (51.85%)
Mean	-3.1176	-4.4	-3.881
Zero Difference			
Count (Percentage)	4 (11.11%)	6 (13.33%)	10 (12.35%)
Mean	0	0	0
TOTAL			
Count (Percentage)	36 (44.44%)	45 (55.56%)	81 (100%)
Mean	1.0278	-1.4889	-0.37037

Table 3. Results of the Regression Model

	Robust Coef.	Std. Error	t	P>|t|
Tax Structure	-2.653006**	1.292869	-2.05	0.044
Sex	.6889342[NS]	1.061174	0.65	0.518
Age	-1.823582*	1.000064	-1.82	0.072
Allowance	.0007129[NS]	.0017643	0.40	0.6871
Semesters	.6105979[NS]	.5433985	1.12	0.265
Student Assistant	3.119488*	1.617263	1.93	0.058
Difficulty	-3.30803**	1.596942	-2.07	0.042
Interest	1.351085[NS]	1.34089	1.01	0.317
Constant	32.26578*	16.36583	1.97	0.053

Note: *Significant at 10%; **Significant at 5%; NS Not Significant.

This is similar to the results of Weber and Schram (2014), who inferred that income taxes tend to lead to a higher labor supply compared to a wage rate tax. The significant dummy variable for the tax structures also meant that the tax structures could have different effects despite yielding the same payoff, in line with the assumption of bounded rationality and money illusion. It may be said that individuals may be looking at nominal, instead of real, terms. Individuals fail to make rational decisions because of human cognition (Jones, 1999). Likewise, they may have felt the loss of payoff more in the income tax policy, in which the loss is in the aggregate. This study also proved that individuals could violate a major assumption in rational choice, which is the axiom of invariance. This also proved that framing effects could affect the perception and reaction of individuals to taxes. This is in line with Hossain and List (2012), which said that framing manipulations can increase productivity.

Concerning loss aversion, the income tax group might have felt the tax burden more than the wage rate tax group. It is in line with the study of Blaufus et al. (2010), who presented that framing could

alter the tax burden of individuals. This does not align with the fact that money is fungible. Framing manipulation in the reduction of payoff or the tax may have significant effects on the productivity of individuals. The significant tax structure dummy variable may also be related to the economic concept of mental accounting, in which individuals interpret the tax differently. Using cognitive operations, individuals may have been influenced by hedonic framing, where individuals have combined losses, which would appear to generate a greater loss than equally separate ones (Thaler, 1999).

Aside from the tax structure dummy variable, the variables denoting age, past student assistant experience, and perceiving the task difficult was found to be significant variables in affecting the differences in productivity. Other variables, including sex, allowance, semesters, and interest were found to be insignificant. Age was also found to be a significant variable, contrary to the findings of Blaufus et al. (2010) suggesting that age did not influence the perception of taxes. In this study, age was found to be a determinant of differences in productivity. Implied from the statistical results,

older individuals, on average, tend to have lower differences in productivity, or that they tend to have higher productivity even when taxed. Older individuals also tend to be more affected by the tax than younger individuals (Fochmann et al., 2010a).

Past student assistantship experience may significantly affect the perception of the participants, which may be attributed to their previous knowledge of the task. Individuals who have previous knowledge of the task tend to respond to tax by lowering productivity. The learning effect from their previous experiences may affect their productivity. Furthermore, task perception in difficulty was proven to affect the perception of individuals. When an individual perceives the task as difficult, the difference in productivity decreases. Individuals are more responsive to the tax when they think that the task is difficult.

The variables sex and allowance were found to be insignificant in the study. It is in line with past literature by Blaufus et al. (2010), which posited that these variables did not affect tax perception. The number of semesters enrolled, representing the educational level of the participant, was found insignificant, opposing past literature stating that misperception of taxes is related to the level of education (Blaufus et al., 2015). The interest of the individual in the activity was also found to be insignificant in affecting the response of individuals to taxes, contrary to past literature stating that productivity is affected by the interest of the individual (Hulleman and Harachiewicz, 2009).

V. Conclusions

Taxation is important in every economy that aims to sustain and develop the country. Despite taxation's importance on revenue generation of an economy, taxes create disincentives for workers to be more productive. Using behavioral economics, lessening the disincentive of tax may be possible through nudging. An individual who is presented with a tax differently should not alter his/her work patterns since the real net benefits did not change. However, the concept of the money illusion ultimately creates an opportunity for tax structure

to alter their behavior. Money illusion refers to the tendency of individuals to think in nominal terms rather than in real terms (Miao & Xie, 2012).

This study aimed to examine the effects of tax structure on productivity. Specifically, this study hoped to determine whether individuals presented with income tax and wage rate tax have differences in productivity and to determine the socio-demographic and economic variables that affect productivity. The theory of rational choice implies that individuals should perceive taxes the same way and should be indifferent when presented with a tax policy that yields the same payoff. Several labor models, including the labor-leisure choice model and the efficiency wage theory, support this claim.

This study was rooted in the bounded rationality of individuals. Bounded rationality states that decision-makers are deemed rational because they are goal-oriented and adaptive. However, individuals fail to make rational decisions because of the human cognitive and emotional architecture (Jones, 1999). The study adopted the equation of income tax and wage rate tax from the study of Blomquist (1984). Using experimental economics, the study was done in four different Econ 11 (General Economics) classes at the University of the Philippines Los Baños. For the procedure, the participants were asked to check quizzes twice through two treatments, the control treatment (without tax) and the tax treatment. In the tax treatment (one month after the control treatment), the respondents were presented with an income tax and a wage rate tax, two classes for each tax treatment. A regression of the tax structure and other factors was then used to verify the significance of the variables. The dependent variable was the difference in productivity between the treatments.

For the analysis of the impacts of tax structure on labor productivity, most of the participants had increased output despite having a tax, which lowered the aggregate payoff. This meant that their differences in productivity were mostly negative, which may imply a dominant income effect. Contrary to the Efficiency Wage Theory, results show that more than half of the total participants have a higher output in the tax

treatment. This means that it generally increased productivity, as opposed to the assumptions of the said theory. The results of the regression model indicated that alteration of tax structure was statistically significant in affecting the productivity of individuals. This result can be ascribed to the cognitive biases that exist in humans' way of thinking, which is consistent with preceding literature on bounded rationality. In comparing the two tax structures used in the experiment, the income tax was observed to yield more productive individuals than the wage rate tax probably because individuals feel its impact more and thus produce more to earn the same net income earned before the tax. This finding suggests that employers can alter the structure of their incentive schemes, even without increasing incentives, to increase their employees' productivity. Age, previous knowledge of the task, and perceived difficulty of the task were also found to be significant factors affecting productivity. It only suggests that employers should also consider these characteristics as it affects the productivity of workers.

With this, it is recommended that different tools and experimental approaches must be used in looking at the framing effects in tax. It is also recommended to examine the errors done during the task because of a possible "experimenter's bias," since there is an apparent increase when presented with tax. These errors may have implications for the quality of work of an employee. Hence, future studies might want to consider alternative approaches to deal with these issues.

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Appendices

Fig. A. Sample Quiz in the Experiment

Name: A

Control No:

20

1. E	11. C
2. C	12. E
3. D	13. D
4. F	14. A
5. E	15. B
6. B	16. B
7. B	17. C
8. C	18. F
9. C	19. F
10. E	20. E

Fig. B. Sample Answer Sheet in the Experiment

Name:

Control No:

ANSWER KEY

1. E	11. C
2. C	12. E
3. D	13. D
4. F	14. A
5. E	15. E
6. B	16. B
7. A	17. C
8. C	18. F
9. D	19. F
10. E	20. E

Table. A. Sample Questionnaire in the Experiment

Please answer all items truthfully. Rest assured that the information that will be given is confidential.

Name: _____

Section: _____

Student No: _____

College: _____

Course: _____

Sex: _____

Age: _____

Daily allowance: _____

Number of semesters stayed in the university: _____

Classification: _____

Number of units this semester: _____

Running GWA: _____

Please answer the following questions using YES or NO:

- Have you worked before? _____
- Have you been a student assistant before? _____
- Are you interested in the task? _____
- Is the task difficult? _____
- Do you believe that tax is important? _____
- Have you dealt with wage/income taxes before? _____
- Should laborers be taxed from actual wages or income? _____

Rate the activity based on your perception, from 1(least agree) to 10(strongly agree):

The task is interesting _____

The task is difficult _____

_____

CONFORME

Table. B. T-test Results for Age by Tax Structure

Group	Obs	Mean	Std. Error	Std. Dev.	[95% Conf. Interval]	
0	36	17.94444	.2388612	1.433167	17.45953	18.42936
1	45	18.15556	.1650086	1.106911	17.823	18.48811
combined	81	18.06173	.1398254	1.258428	17.78347	18.33999
diff		-.2111111	.2821706		-.7727577	.3505354

diff = mean(0) - mean(1)   t =   -0.7482

Ho: diff = 0   degrees of freedom =   79

Ha: diff < 0	Ha: diff != 0	Ha: diff > 0
Pr(T < t) = 0.2283	Pr(|T| > |t|) = 0.4566	Pr(T > t) = 0.7717

Table. C. T-test Results for Allowance by Tax Structure

Group	Obs	Mean	Std. Error	Std. Dev.	[95% Conf. Interval]	
0	36	271.25	52.64789	315.8874	164.3691	378.1309
1	45	213.6222	13.44909	90.21925	186.5174	240.7271
combined	81	239.2346	24.58616	221.2755	190.3065	288.1626
diff		57.62778	49.36692		-40.63463	155.8902

diff = mean(0) - mean(1)   t =   1.1673

Ho: diff = 0   degrees of freedom =   79

Ha: diff < 0	Ha: diff != 0	Ha: diff > 0
Pr(T < t) = 0.8767	Pr(|T| > |t|) = 0.2466	Pr(T > t) = 0.1233

Table. D. T-test Results for Semesters by Tax Structure

Group	Obs	Mean	Std. Error	Std. Dev.	[95% Conf. Interval]	
0	36	3.722222	.4190145	2.514087	2.871577	4.572867
1	45	4.377778	.2528402	1.696104	3.868212	4.887344
combined	81	4.08642	.2345192	2.110672	3.619712	4.553128
diff		-.6555556	.4691765		-1.589428	.2783169

diff = mean(0) - mean(1)   t =   -1.3972

Ho: diff = 0   degrees of freedom =   79

Ha: diff < 0	Ha: diff != 0	Ha: diff > 0
Pr(T < t) = 0.0831	Pr(|T| > |t|) = 0.1663	Pr(T > t) = 0.9169

Ethical Guidelines

Chapter 1. General Rules

Article 1 (Purpose)

The purpose of the following rules is to present the basic ethical principles and direction needed to ensure the research ethics of editorial board members, peer-reviewers, and authors who examine or submit articles to the Journal of Global Business and Trade (JGBT). The International Academy of Global Business and Trade (IAGBT)publishes these rules to present the procedure and actions for research misconduct.

Article 2 (Object of the Study and Scope)

The research is subject to sanction, investigation and judgement to determine whether research ethics were followed when any of the following occurs:

    i.   The study was submitted to the Journal of Global Business and Trade,

    ii. The study was confirmed to be published in the Journal of Global Business and Trade,

    iii. The study has already been published in the Journal of Global Business and Trade.

Chapter 2. Honesty and Social Responsibility of the Research

Section 1. Honesty in the Research

Article 3 (Honesty of the Research)

a. Researchers must conduct every research behavior (proposing research, researching, reporting and presenting research, investigating and judging) honestly and sincerely.

b. Researchers must describe the content and the importance of the study clearly and objectively, and must not delete or add results arbitrarily.

c. Researchers must carry out every study without any bias or prejudgment.

Article 4 (Ethics for Researchers)

a. Researchers must not commit research misconduct during any part of the research process.

b. A study must not be submitted if it has been published in other journals, and researchers must not request review of the study to different journals at the same time. However, a thesis or a paper presented in a conference as a working paper shall be exceptions.

Article 5 (The Record, Storage, and Report of Research Data and its Disclosure)

a. All research information must be clearly and precisely recorded, processed, and preserved so that it may be accurately analyzed and confirmed.

b. Researchers shall use proper research methods and statistics, and those shall be available to the public if necessary.

Section 2. Fairness in Researchers' Contributions

Article 6 (Collaborative Research)

Researchers must make the roles and contributions of all contributors clear if they conduct a joint study with other researchers, and shall take full responsibility for establishing this. Prior to conducting research, mutual agreement and understanding shall be made with regard to property rights and ownership issues, research director selection, authorship and the standard of order, the data collection method, individual role in the study, and expectations and objectives of the study.

Article 7 (Responsibility and Duty, Order of Authors)

a. Researchers are responsible only for the study that they carry out or are involved in as an author, and are recognized for that achievement.

b. Authors must accept requests for proof of their contributions.
c. The order of authors must accurately reflect the academic contribution by each author to the research contents or results, regardless of the authors' relative positions.

Article 8 (Corresponding Author)
a. Corresponding authors shall take overall responsibility for the results of the study and proofs.
b. Corresponding authors shall have the burden of proof with respect to the order of the author and co-author(s).

Article 9 (Affiliation of Author)
When indicating the affiliation of author(s), the author's current status in principle shall be given. However, it is possible to follow the customs of the author's academic field if their field of affiliation follows a different custom.

Chapter 3. Research Misconduct and Unethical Research Conduct

Section 1. Methods and Principles of Citation

Article 10 (Methods and Principles of Citation)
a. The author may cite a part of other researchers' studies in his/her research paper using their original text, or the translated version by introducing, referring to or making a comment on the original.
b. The author shall take all possible measures to ensure the accuracy in stating sources and making the list of references. The author must confirm all elements of a citation (author's name, number/volume of the journal, page and published year) not depending on the secondary source but solely on the original work. However, when inevitable, the author can include with acknowledgment.
c. The author must cite in a reasonable manner and use the good faith principle, so that uncited works can be clearly distinguished from cited works.
d. The author must cite published works only. However, in the case of citing unpublished academic materials that have been acquired through personal contact, paper review or proposal review, the author must acquire consent from the relevant researcher(s).
e. When the author introduces ideas or theories in his/her work that have been presented in another study, the source must be stated.
f. The author must distinguish his/her own ideas from cited materials when borrowing substantive parts from one source, so readers can clearly recognize the author's work.
g. If a reference has a significant impact on the direction of the research or can help the reader understand the contents, the author must include all such works on the list of references, except in such cases where the relevant research can theoretically and empirically be inferred.

Article 11 (Method of General Knowledge Citation)
a. If the author uses someone else's idea or a fact provided by them, the source should be provided. However, general knowledge or material that general readers will already recognize shall be an exception.
b. If the author is unsure whether any concept or fact qualifies as general knowledge, it is recommended to cite the original text.

Section 2. Research Misconduct

Article 12 (Definition of Research Misconduct)
"Research misconduct" refers to any instances of forgery, falsification, plagiarism, failure to give proper credit to co-authors or redundant publications that may emerge during the entire research process (research proposal, conduct of research, report and presentation of research, investigation and judgement).
a. "Forgery" refers to the act of presenting non-existent data or research results.
b. "Falsification" refers to the acts which artificially manipulate research processes, randomly modify, or delete data resulting in distorted research content or research results. (Here, "deletion" refers to the act of using

only favorable data and intentionally excluding the data that might cause unexpected or undesired results.).

c. "Fabrication" refers to the act of intentionally creating a document or record that does not exist.

d. "Plagiarism" refers to the acts which pirate other's work, ideas or research, using ideas, hypotheses, theories, research contents, or research results without justifiable approvals, citation, or quotations, as if those were his/her own.

    i. "Idea Plagiarism" refers to the act of using someone else's ideas (explanations, theories, conclusions, hypothesis and metaphors) in full, substantial proportions or in a fragmented revised form without giving appropriate credit to the originator of the words and ideas. Authors have moral responsibility to indicate the source of ideas through a footnote or a reference. Authors must furthermore not steal other's ideas which are known through peer review of research proposals and submitted articles.

    ii. "Text plagiarism" refers to the act of copying text from another's work without clarifying the original author.

    iii. "Mosaic plagiarism" refers to the act of combining a part of a text with a few words added, inserted or replaced with synonyms, and others without clarifying the source or the original author.

e. "Redundant Publication" refers to the act of publishing a paper that is identical or highly similar text to one that has already been published in the past in another academic journal without alerting the editors or readers of the fact that this work was previously published elsewhere. If the contents of the paper are almost the same as his/her previously published paper, the later paper is regarded as a redundant publication even if the text has a different point of view or perspective, or including a different analysis based on the same data that has been previously published. In the case in which the author would like to publish a paper using a previously published paper, he/she must acquire permission from the chairperson after providing the information about the publication and double-checking whether it is a redundant publication or duplication of a publication.

f. "Self-plagiarism" refers to the act of using images, graphs or part of one's own research already published without identifying the source, and it is regarded as redundant publication.

g. "Failing to give proper credit to co-authors" refers to the act of failing to list those who have contributed academically to the research process or results as a co-author or conversely to the act of listing those who have not made any academic contribution as co-authors.

Article 13 (Research Misconduct and Copyright Infringement)

a. Generally, the copyright of all papers and instances published through IAGBT is assigned to the author. However, if they are utilized for public objects like education, IAGBT owns the right of use.

b. The full term of copyright is assigned to the academic journal publisher in all papers published in academic journals.

c. It should be noted that "Redundant Publication" may cause copyright violation.

d. It should be noted that the author should use proper quotation marks when widely citing text from copyrighted sources, and even if the text is properly cited, it could infringe copyright.

Section 3. Inappropriate Writing

Article 14 (Inappropriate Writing)

The following are regarded as inappropriate writing:

    i. Inappropriate citations

    ii. Distorting references

    iii. The act of depending on abstracts when citing the published paper

    iv. Citing papers that the author did not read or understand

    v. The act of partially citing despite intensively borrowing from a single source

    vi. The act of reusing text

Article 15 (Prohibition of Distortion of References)

a. References must only include documents that are directly related to the article content. Unrelated references for the purpose of intentionally manipulating the citation index of the paper or academic journal should not be included.

b. As a moral responsibility, the author should not only cite the references which will be favorable to his/her data or theory, but also cite references which may contrast with his/her point of view.

Article 16 (Reuse of Text)

a. "Reuse of Text" refers to the act of re-using a part of the manuscript that he/she has used in a previous paper.
b. Text reuse is an act contradictory to ethical writing, so the author must avoid re-using text already used. In case of unavoidable text re-use, the author should not violate copyright infringement by following standardized reference practices including the use of quotation marks or proper indication.

Chapter 4. Ethical Rule Enforcement

Section 1. Research Ethics Committee

Article 17 (Ethical Rule Pledge)

New members who have enrolled in the research pool of IAGBT shall acquaint and pledge to abide by these research ethics when submitting to the "Journal of Global Business and Trade" and conducting research. Current members shall be regarded as having pledged to abide by these research ethics when initiated.

Article 18 (The Announcement of Violation of Ethical Rule)

If a member learns that another member has violated any ethical rules, he/she should endeavor to correct the mistake by helping make him/her be aware of the rules. However, if he/she does not correct the violation or the ethical violation is obviously unveiled, the member must report to the committee immediately.

Article 19 (Organization of the Research Ethics Committee)

IAGBT shall establish a Research Ethics Committee (hereinafter referred to as the "Committee") mandated to deliberate on matters falling under each of the following sub-paragraphs:

a. Matters concerning establishment and revision of these rules
b. Matters concerning acceptance and handling of misconduct
c. Matters concerning beginning actual investigation and decision, approval, and re-deliberation of investigation results
d. Matters concerning protection of informant and examinee
e. Matters concerning investigation of research integrity, handling of investigation results and follow up measures
f. All the matters concerning operations of other committees

Article 20 (Organization of Research Ethics Committee)

a. The Committee shall consist of one chairperson and members of no less than five but no more than nine persons.
b. The chairperson and the members shall be appointed by the chairman of IAGBT.
c. The members of this committee shall hold a one year term and they may be reappointed.
d. The chairperson and the members of this committee shall maintain independence and confidentiality with respect to the details relating to deliberations and decisions.

Article 21 (Organization of Research Ethics Committee)

a. The chairperson of the committee shall convene any meeting and preside over such meetings.
b. The committee's meetings shall open with the attendance of a majority of the total members including the chairperson and resolve with the concurrent vote of a majority of those present.
c. No meeting of the committee shall be open to the public. [The meeting shall not be open to the public in principle, but whenever deemed necessary, the committee can ask the related party and hear their opinions.]
d. Whenever deemed necessary, the committee can ask the related party and hear their opinions.
e. Any member who is involved in the research subject to an investigation will not be permitted to attend the concerned meeting due to a conflict of interest.

Article 22 (Authorities and Responsibilities of the Committee)

a. The committee can summon for attendance and data submission any informants, examinees, witnesses and

testifiers, in the process of an investigation.

b. When the examinee refuses to attend the meeting or data submission without a justifiable reason, it could be presumed as an indication that he/she has acknowledged the allegations.

c. The committee can take substantial measures to prevent any loss, damage, concealment or falsification of research records or evidence.

d. The committee members should comply with confidentiality concerning deliberation-related matters.

Section 2. Research Integrity Investigation

Article 23 (Reporting a Fraudulent Act)

An informant can report a fraudulent act using any means available when reporting using their real name. However, when reporting anonymously, he/she must submit the title of the paper, and the evidence and detail of the misconduct in writing or by e-mail.

Article 24 (Confidentiality and Protection of Rights of Examinee and Informant)

a. The committee should not reveal the personal information of the informant unless it is necessary.

b. The committee must take action to protect the informant if the informant experiences illegitimate pressure or threats due to reporting the fraudulent act.

c. Until the investigation of a fraudulent act is completed, the committee must be careful not to infringe upon the rights or reputation of the examinee. If the person turns out to be innocent, the committee must make efforts to recover the reputation of the person.

d. The identity of the informant, investigators, testifiers, and consultants should not be disclosed.

e. All facts relating to research ethics and authenticity investigations must remain confidential and the people involved in the investigation must not reveal any information obtained during the process. If there is a need to disclose related information, the committee can vote to make such a decision.

Article 25 (Raising an Objection and Protection of Defense Right)

a. The committee must ensure the informant and examinee have equal rights and opportunities to state their opinions and objections. Such procedures must be informed to them beforehand.

b. An examinee or informant may require the avoidance of deliberation and decision after explanation in case he/she expects an unfair decision.

c. The research ethics committee must give the examinee a chance to submit their opinion and clarify any fact revealed during the first report or any additional report.

Article 26 (Preliminary Investigation of Research Misconduct)

a. The committee must investigate the presence of misconduct if there is a considerable doubt about legitimate conduct or detailed information about misconduct.

b. The chairperson can officially carry out the investigation (hereinafter referred to as the "preliminary investigation") which is a procedure to decide whether the suspected misconduct should be investigated after consultation with the chairman of IAGBT.

c. The committee shall form the preliminary investigation committee consisting of no more than five members within 30 days of reporting.

d. The committee shall inform the informant and examinee of the formation of such a committee, and give the examinee a chance to clarify within 30 days.

e. A preliminary investigation is initiated within 30 days of the formation of the preliminary investigation committee, and the investigation should be completed within 30 days of the start of the investigation except in unavoidable circumstances.

f. If it has been more than five years since a misconduct was committed, the reporting is not handled in principle even if the reporting is accepted.

g. Through preliminary investigation, the following is reviewed:

   i. Whether the reported instance qualifies as research misconduct

   ii. Whether the reporting is specific and clear enough to lead to an actual investigation

   iii. Whether more than five years has passed since the reported misconduct was committed

Article 27 (Report and Notice of the Preliminary Investigation Result)
a. The result of the preliminary investigation shall be notified to the informant and examinee within ten days of the committee's decision, and reported to the chairman of IAGBT.
b. The result report of the preliminary investigation must include the following:
    i. Specific information regarding the alleged misconduct
    ii. Facts regarding the alleged misconduct
    iii. Grounding for decision on whether to conduct an actual investigation

Article 28 (Raising an Objection and Protection of Right of Defense)
a. The committee must ensure that the informant and examinee have equal rights and opportunities of opinion statement and objection. Such procedure must be informed beforehand.
b. The informant and examinee can make an objection within ten days from the day of being notified of the preliminary investigation.

Article 29 (Beginning and Duration of an Actual Investigation)
a. The actual investigation begins within 30 days after a positive result from a preliminary investigation. During the period, the actual investigation committee consisting of no more than nine persons (including the preliminary investigation committee) must be formed to conduct an actual investigation.
b. The actual investigation must be completed within 90 days from the beginning date.
c. If the investigation committee decides that it cannot be completed within the specified period, it can explain the reason to the committee and request a 30 day extension (one time only).

Article 30 (Formation of an Actual Investigation Committee)
a. An actual investigation committee is composed of no more than nine members.
b. Formation and duration of an actual investigation committee is determined by the committee. The chairperson of the actual investigation committee is elected among the actual investigation members.
c. The investigation committee shall include at least two members with specialized knowledge and experience in the relevant field.
d. A person who has a stake in the investigated matter must not be included in the actual investigation committee.

Article 31 (Request for Appearance and Document Submission)
a. The actual investigation committee can request the examinee, informant(s), and testifiers to appear for testimony, and the examinee must comply.
b. The actual investigation committee can ask the examinee for submission of a document, and retain and store the relative research materials about the person involved in the misconduct after the approval of the head of the research organization in order to preserve evidence relating to the investigation.

Article 32 (Exclusion, Avoidance and Evasion)
a. The examinee or informant(s) can require exclusion by identifying the reason if there are reasons to believe that a committee member is unable to maintain fairness. When such request for exclusion is recognized, the member subjected to the request shall be excluded from the concerned investigation.
b. If the committee member is directly related to the corresponding matter, he/she shall be excluded from all deliberation, decisions, and investigation of the matter.
c. The chairperson can suspend the qualification of a member who is related to the corresponding matter in connection with the corresponding investigation.

Article 33 (Investigation Report Submission)
The actual investigation committee must submit the result to the committee within the actual investigation period, and the result must include the following:
    i. Specific details of the alleged misconduct
    ii. Facts regarding the alleged misconduct
    iii. Evidence, witness list and affidavits

   iv. Investigation results
   v. Other data useful for decisions

Article 34 (Decision)
a. The decision must be made within six months from the beginning of the preliminary investigation.
b. The committee shall make the decision confirming that the examinee committed research misconduct after reviewing the result report.

Section 3. Action after Investigation

Article 35 (Action in accordance with Investigation Result)
When a decision is made confirming the research misconduct, the committee can sanction the author with applicable punishment to each of following, or impose corresponding retribution.
   i. The publication is postponed until the final decision of the research ethics committee is made even if the paper has been confirmed to the author that it will be published.
   ii. The publication of the paper to which the research misconduct is related is to be canceled and deleted from the article list of the journal even if the volume has already been published.
   iii. The author found to have committed such misconduct is prohibited from submitting papers to the journal for three years, and these facts are made public on the homepage of the journal (http://www. pfw.edu/ jgbt).
   iv. If there is an author found to have committed plagiarism or redundant publication, the editorial board stores the relevant investigation details for five years.
   v. The chairperson of the organization with which the author(s) is affiliated is notified of the final decision.

Article 36 (Investigation Result Notification)
The chairperson of the committee shall immediately notify the related persons such as the informant and examinee of the committee's decision regarding the investigation result in writing.

Article 37 (Investigation Result Notification)
a. If the informant or the examinee refuses the committee's decision, he/she must submit a re-deliberation request to the committee within 15 days from receipt of the result notice as prescribed in Article 37.
b. The committee must decide whether re-deliberation is necessary within 10 days of the receipt of the re-deliberation request.
c. The committee will decide there-deliberation procedure and method.

Article 38 (Follow-ups such as Recovery of Author's Honor)
If the results of the investigation confirm that no research misconduct has been identified, the committee must take follow-up steps to recover the reputation of the examinee.

Article 39 (Storing the Record and Confidentiality)
a. All records regarding the preliminary and actual investigation are stored for five years from the date of the investigation's conclusion.
b. All facts relating to research ethics and the investigation must remain confidential and the people involved in the investigation must not reveal any information obtained during the process. If there is a need to disclose investigation information, the committee can vote to make such decision.

Article 40 (Etc.)
Matters that are not determined by these rules are to be decided by the editorial board.

Article 41 (Date of Effectiveness)
These regulations shall be effective as of January 1, 2012.

Regulations of the Editorial Board

Journal of Global Business and Trade

Chapter 1. General Rules

Article 1 (Purpose)
The purpose of the following rules is to prescribe matters regarding the editorial work and standards for the Journal of Global Business and Trade (hereinafter referred to as "JGBT") published by the International Academy of Global Business and Trade (hereinafter referred to as "IAGBT").

Chapter 2. Editorial Committee

Article 2 (Editorial Committee)
The editorial committee (hereinafter referred to as "committee") is established in order to accomplish the purpose of Article 1.

Article 3 (Formation of Editorial Committee)
a. The editorial members shall be appointed by the chairman of IAGBT, and the committee shall consist of no more than 50 members.
b. The chief editor shall be appointed by the chairman of IAGBT and is in charge of all editing.
c. The editorial committee shall be composed of two chief editors, one editor, and one managing editor. The editors are appointed by the chairman of IAGBT among editorial members.
d. The term for the chief editor is three years, and the term for the editorial members is two years, and editorial members may be reappointed.
e. This committee makes decisions with a majority attendance of the members and a majority agreement of the members present.

Article 4 (Qualification of Editorial Members)
The editorial members shall meet the following qualifications:
  i. Being at least an associate professor in a domestic/international university or a person equally qualified.
  ii. Someone who studies in an area within the JGBT's specialty and who has published at least 3 articles in a journal (or 1 article in an SCI, SSCI and/or SCOPUS indexed journal) within the last three years.

Article 5 (Responsibilities and Obligations of Editorial Members)
a. Editorial members are fully responsible for the decision to publish JGBT-submitted papers, confirm their integrity during the deliberation process, and observe candidates during the editing process.
b. Editorial members should respect the author's person and independence as a scholar, and make the process of the evaluation of the research paper public if there is a request.
c. Editorial members should handle submitted papers only based on the quality and submission guidelines, not based on the author's gender, age, or affiliation.
d. Editorial members should request a reviewer with specialized knowledge and fair evaluation ability in the relevant field to evaluate submitted papers. However, if evaluations of the same paper are remarkably different, editorial members can acquire advice from an expert in the relevant field.
e. Editorial members should not disclose the matters of the author and the details of the paper until a decision is made pertaining to the publication of the submitted paper.

Chapter 3. Paper Submission and Peer Review Committee

Article 6 (Qualification of Submission and Submission)
a. All the paper submitters must be members registered with JGBT.
b. All papers should be submitted through the JGBT online system (https://www.pfw.edu/jgbt or http://www.jgbt.us), and can be submitted at any time. English-language papers from authors outside of the United States of America may also be submitted using e-mail.

Article 7 (Formation of Peer Review Committee)
a. Peer reviewers are appointed by the chief editor, and selected based on the field of the reviewer's expertise. (According to circumstances, a peer reviewer who is not a member of JGBT may be appointed.)
b. Editorial members for each content subject such as international economy, international management, or practice of trade can also serve as peer reviewers.
c. The chief editor represents editorial members, handles all the matters relating to review, and reports the results of peer review to the committee.
d. The managing editor is in charge of the procedure relating to review.
e. The classification and selection of submitted papers is decided by the chief editor and the managing editor, and they report it to the committee.

Article 8 (Qualification of Peer Reviewers)
Peer reviewers shall have the following qualifications:
  i. Being at least an associate professor in a domestic/international university, or a person who is as equally specialized as the person above.
  ii. Someone who studies an area within the JGBT's specialty and has published at least 3 articles in a journal (or 1 article in an SCI, SSCI and/or SCOPUS indexed journal) within the last three years.
  iii. Someone who presents a paper, chairs a session or serves as a discussant at an academic conference at the same level of the institution, or has served as a reviewer of a study which has been indexed in a domestic or international journal within the last three years.

Article 9 (Responsibility and Duty of Peer Reviewers)
a. Peer reviewers should evaluate papers and report the results of the evaluation to the committee within the time period set by the committee. However, if he/she believes that they are not appropriately qualified to review the paper, they should notify the committee without delay.
b. Peer reviewers should respect the author's person and independence as a scholar. Peer reviewers may request for revision of the paper with detailed explanations if needed in the evaluation of the research paper.
c. Papers are reviewed confidentially using a method in which the name and affiliation of the author is confidential to the public. Showing the paper and/or discussing the contents of the paper with a third party is not desirable unless a consultation is needed for purposes of review.

Article 10 (Unethical Behavior in the Review Process)
a. Peer reviewers must not manipulate either directly or indirectly the related research-specific information contained in the research proposal or review process without the consent of the original author.
b. Peer reviewers must be careful of the following since it could be regarded as unethical research practices in the review process:
  i. The act of handing over are quested paper to students or a third party
  ii. The act of discussing the details of a paper with colleagues
  iii. The act of obtaining a copy of the requested material without shredding it after review
  iv. The act of disgracing the honor of others or fabricating a personal attack in the review process
  v. The act of reviewing and evaluating a research paper without reading it

Article 11 (Personal and Intellectual Conflict)
a. Peer reviewers must fairly evaluate using an objective standard regardless of personal academic conviction.
b. Peer reviewers must avoid personal prejudice when reviewing a paper. If there is a conflict of interest including personal conflict, it must be notified to the committee.

c. Peer reviewers must not propose rejecting a paper due to a conflict in interpretation or with the point of view of the reviewer.

Chapter 4. Principle and Process of Paper Review

Article 12 (Papers for Peer-review)
Review shall proceed based on the writing and submission guidelines. If the submitted paper substantially diverges from the writing and submission guidelines, the paper may not be reviewed.

Article 13 (Request for Review and Review Fee)
a. The chief editor discusses the selection of reviewers with editorial members and selects two reviewers for each paper after submitted papers pass the eligibility test.
b. The chief editor immediately requests the two selected reviewers to review the relevant submitted paper.
c. Papers are reviewed by confidential method in which the name and affiliation of the author is confidential to the reviewer, and the name of the reviewer is confidential to the author.
d. The chief editor requests a review after deleting the name and the affiliation of the author from the submitted paper, so that the reviewer cannot obtain the identity of the author.
e. A review fee shall be paid to the reviewer.

Article 14 (Review of Paper and Decision)
a. Reviewers shall submit a decision report via the JGBT's online submission system (http://www.pfw.edu/jgbt or http://www.jgbt.us) within two weeks after they are asked to review a paper.
b. The reviewer shall decide whether the paper should be published based on the following standard. However, if the paper receives less than 30 points in the suitability and creativity of the topic, it will not be published.
    i. The suitability of the topic (20 points)
    ii. The creativity of the topic (20 points)
    iii. The validity of the research analysis (20 points)
    iv. The organization and logic development of the paper (20 points)
    v. The contribution of the result (10 points)
    vi. The expression of the sentence and the requirement of editing (10 points)
    The reviewer must give one of the following four possible marks within the two week period: A (90~100 points, acceptance), B (80~89 points, acceptance after minor revisions), C (70~79 points, re-review after revision), F (Rejection), and write an overall review comment concerning the revision and supplementation of the paper.
c. In an instance where the reviewer does not finish the review within the two week period, the chief editor can nominate a new reviewer.

Article 15 (Correction of Papers according to the Editing Guideline)
a. Before holding an editorial committee meeting, the chief editor shall request editorial staff correct those papers that receive "acceptance" or "acceptance after minor revisions", using the journal's paper editing guidelines. However, if there is a paper that receives "acceptance" after the editorial committee meeting, the chief editor will request the editorial staff to correct the paper after the meeting.
b. The chief editor shall notify each author of the result of his or her paper review after receiving the corrected version of the paper from the editorial staff. However, papers which receive a "rejection" shall not be notified of their result.

Article 16 (Decision of Paper and Principle of Editing)
a. The chief editor shall call an editorial board meeting and make publication decisions after receiving finished papers from reviewers.
b. The editorial board will make decisions to publish based on the following chart. The editorial board should respect reviewers' decisions on relevant papers, but can make decisions based on the editorial policy of the JGBT.

Results of 2 peer-reviews	Overall evaluation (average)	Decision to publish
AA	A	Acceptance
AB, AC, BB	B	Acceptance after minor revisions
AD, BC, BD, CC	C	Re-evaluation after revision
CD, DD	F	Rejection

c. The paper that is awarded "acceptance" should receive a "B" or higher from reviewers or the level of overall evaluation (average) should be "B" or higher, and the paper that is awarded "acceptance after minor revisions" should have its satisfactory revisions and/or developments confirmed by the initial reviewer after re-submission.
d. The editorial board shall confirm that papers in consideration for publication are suitable to the writing and submission guideline of JGBT, look through detailed matters, and decide particular issue policies such as the number of papers and the order of them.
e. In the case where a paper was presented or submitted for review previously, it cannot be published in JGBT.
f. In the case where an author submits two or more papers for consideration, only one paper that receives "acceptance" shall be published in the same issue.

Article 17 (Notification of the Result)
a. The chief editor shall notify an author of the review result after the initial evaluation or re-evaluation is finished, but can request the author to revise and develop the paper based on the evaluation report. If the editorial board makes a final decision on publication, the author should be notified.
b. The author must be notified of the review result within one month from the day of receiving the paper or revised paper (or the deadline of submission). If it is impossible to notify the author within one month, the reason and the due date of notification must be notified to the author.
c. Unless there is a specific reason, the author must submit a file including a response to the evaluation report, revision to and/or development of the paper to the chief editor after editing the paper within the period the editorial board suggests when he/she is asked to edit the paper. The changed details must be confirmed by the editorial board as well. In case the author does not submit the revision and development to the editorial board within the period, it shall be automatically postponed until this process is finished.
d. A paper that receives a "C" in the overall evaluation (average) shall be re-evaluated after the chief editor sends the revised article and revision report to the initial reviewer(s).
e. In cases where the evaluations of the same paper are remarkably different among reviewers, the chief editor can nominate a third reviewer and request a re-evaluation. In this case, the chief editor shall send the evaluation report to three different reviewers and have them submit the final evaluation report based on the details of the paper, and the paper can be published after revision only if the final mark awarded the revised paper is higher than a "B" in the overall evaluation.
f. The chief editor will issue an acceptance letter for the papers confirmed to be published.

Article 18 (Proofreading and Editing)
a. The chief editor shall request domestic/international members to proofread and edit papers confirmed to be published.
b. Proofreading and editing members shall be recommended by the chief editor and appointed by the chairman of IAGBT.
c. The chief editor shall send the results of proofreading and editing to the original author and request the author to edit the paper appropriately.
d. The author, unless there is a specific reason, must submit the revised paper and revision report to the chief editor after editing the paper within the period the editorial board suggests when he/she is asked to edit the paper. The changed details must be confirmed by the editorial board as well.
e. Even if a paper is confirmed to be published, it will be rejected if it has not fulfilled the editing procedure following the result of proofreading and editing, or has been found to have committed research misconduct of any kind.
f. If an editing member finds plagiarism, inadequate form, or low quality in the process of editing a paper that the journal has confirmed to be published, he/she must notify the chief editor, and can suggest proper

responses to the findings.

g. The chief editor suggests whether to avoid publication of a paper or have the author re-submit the paper after revision and development according to the guidelines stipulated in Article 5. In the case of a paper requested to be revised and developed, publication can be postponed based on the degree of completion and the schedule of revision and development.

Chapter 5. Editing and Publication

Article 19 (Editing and the Date of Publication)

JGBT is published two times a year [30th May, 30th November] in principle. However, if there is a reason such as the number of submitted papers, the committee can increase or decrease the number of issues.

Article 20 (Notification of Editing)

a. The chief editor shall acquire publication consent from the authors of the confirmed papers before printing.
b. The chief editor shall report to the chairman of IAGBT when the editorial process following editorial policy is completed, and shall further follow the outlined process for printing and editing.

Article 21 (Sanction on Plagiarism and Redundant Publication)

If the ethics committee finds that a submitted paper or a published paper contains plagiarism or was published in another journal, the following sanctions will be taken:

a. Distributing after deleting the relevant paper in the journal if the journal has not been distributed yet,
b. Notification of paper deletion on the website if it the related issue has already been distributed,
c. Notification of the plagiarism or redundant publication of the relevant paper on the website,
d. Banning the relevant author from submitting papers to all journals published by IAGBT for two years from the date when plagiarism and redundant publication is found and from presenting in conference, and
e. Notifying the author's affiliated organization or institution of the fact of the plagiarism or the redundant publication, if necessary.

Article 22 (Transfer of the Rights of Publication, Duplication, Public Transmission, and Distribution)

a. The right of publication of the paper is owned by IAGBT unless specified.
b. The author(s) shall transfer the right of duplication, public transmission, and publication to IAGBT. If they do not agree, the relevant paper cannot be published in JGBT.

Article 23 (Notification of Paper on Homepage)

Papers published in JGBT shall be publicly notified on the JGBT homepage (http://www. pfw.edu/jgbt)

Article 24 (Etc.)

The matters that are not decided in these rules are either subject to the submission guidelines or decided by the editorial board.

Article 25 (Date of Effectiveness)

These regulations shall be effective as of January 1, 2012.

Author's Check List

Title of Manuscript:_____

Manuscript ID:_____

Please check ☑ to confirm fulfillment of instructions below before submitting your manuscript

1. General guidelines
☐ The submission contains an original manuscript, a checklist, and a copyright transfer agreement.
☐ The manuscript follows the journal template, using MS Word.
☐ The manuscript consists of a title page, abstract, keywords, JEL Classifications, acknowledgement (if any), main text, references, appendix (if any), tables and figures.
☐ The pages are numbered consecutively beginning with the title page.

2. Title page
☐ The manuscript consists of title, author(s) name(s), and affiliation(s).
☐ The lower area of the title page includes the name(s) of the author(s) and e-mail of the corresponding author only.

3. Abstract, Keywords and JEL classifications
☐ The Abstract is less than 200 words for an original article.
☐ Includes no more than six keywords.
☐ Includes no more than five JEL classifications.

4. Main text
☐ Subtitles are ordered according to the journal template.
☐ All figures and tables are cited in numerical order as they are first mentioned in the text.
☐ All figures and tables are referenced within the text.

5. Tables and figures
☐ The titles of figures and tables are set flush left above them, capitalizing the first letter of each word in these titles except for prepositions and articles.
☐ Vertical lines are avoided in tables.
☐ Pictures or photos are supplied in high resolution (minimum 300 dpi).
☐ Pictures or photos are supplied at a reasonably legible size for printing if they may be affected by resizing in the printing process.

6. References
☐ References follow APA style.
☐ Each entry in the reference list is cited in the main text.
☐ All references are listed in alphabetical order followed by the year published.
☐ The title of books and journals is expressed in italics.
☐ Complete references are included with the full title of the article and up to six author names. Where there are seven or more authors, they are identified as "et al."
☐ Journal articles have been double-checked as to whether the author name, (published year), title, journal name, volume (issue number) and pages are correct.
☐ Books have been double-checked as to whether the author name, (published year), title of book (editions, if any), place of publication, publisher's name, and pages are correct.

Copyright Transfer Agreement

International Academy of Global Business and Trade

Title of Manuscript: _____

All Authors: _____

All authors of this manuscript must agree to the following:

1. All authors certify that the manuscript does not violate any copyright and confirm its originality.

2. All authors have made an actual and intellectual contribution to this manuscript and hold responsibility for its contents.

3. This manuscript has not been published or will not be submitted to another journal for publication.

4. The "International Academy of Global Business and Trade" has rights in legal action against the infringement of copyright of this manuscript without authors' permission.

5. All authors of this manuscript confirm the transfer of all copyrights in and relating to the above-named manuscript, in all forms and media, through the world, in all languages, to "International Academy of Global Business and Trade".

6. If each author's signature does not appear below, the signing author(s) represent that they sign this Agreement as authorized agents for and on behalf of all the manuscript authors, and that this Agreement and authorization is made on behalf of all the authors.

In order for my manuscript to be accepted for publication in the Journal of Global Business and Trade (JGBT), I hereby assign and transfer to the International Academy of Global Business and Trade all rights, title, and interest in and the copyright in the manuscript, entitled.

Date:

Corresponding Author: Signature:

* Submission: You must submit a scanned file (file type: jpg, gif, or pdf) of this signed confirmation and final manuscript file (file type: MS Word) online after the manuscript has been accepted for publication.

Call for Papers

Journal of Global Business and Trade

The Journal of Global Business and Trade (*JGBT*) is the official publication of the International Academy of Global Business and Trade. *JGBT* publishes manuscripts of significant interest that contribute to the theoretical and practical basis of business, economics, and international trade studies. *JGBT*'s broad scope and editorial polices create accessible, thought-provoking content for the general academic community of business, economics, and international trade. The goal of *JGBT* is to publish insightful, innovative and impactful research on business, economics, and international trade. *JGBT* is multidisciplinary in scope and interdisciplinary in content and methodology.

Subject Coverage

JGBT is an interdisciplinary journal that welcomes submissions from scholars in business, economics, and trade disciplines and from other disciplines (e.g., political science) if the manuscripts fall within the JGBT domain statement. Papers are especially welcome which combine and integrate theories and concepts that are taken from or that can be traced to origins in different disciplines.

JGBT is a methodologically pluralistic journal. Quantitative and qualitative research methodologies are both encouraged, as long as the studies are methodologically rigorous. Conceptual and theory-development papers, empirical hypothesis-testing papers, and case-based studies are all welcome. Mathematical modeling papers are welcome if the modeling is appropriate and the intuition explained carefully.

Notes for Prospective Authors

Submitted papers should not have been previously published nor be currently under consideration for publication elsewhere. All papers are referred through a peer review process.

All manuscripts should follow the submission guidelines on the JGBT homepage (https://www.pfw.edu/jgbt).

JGBT operates an on-line submission system. Manuscripts should be submitted to the on-line submission system at https://www.pfw.edu/jgbt or http://www.jgbt.us following all prompts on the screen.

There is no firm submission deadline for papers and the submitted articles will be evaluated on a rolling basis.

Any queries should be sent to the Editor of JGBT at the following address:

Dr. Myeong Hwan Kim (Purdue University Fort Wayne), myeonghwan.kim@pfw.edu.

Guidelines for Authors (updated July 2018)

How to submit the paper

The authors submit their manuscripts (in MS Word Format) to the on-line submission system at http://www.jgbt.us

Blind Review Policy

The journal follows double blind peer review policy. The paper is sent to two reviewers appropriately qualified experts in the field selected by the editor to review the paper in the light of journal's guidelines and features of a quality research paper. For papers which require changes, the same reviewers will be used to ensure that the quality of the revised paper is acceptable.

Manuscript Preparation Guidelines

The author(s) must follow the Manuscript Preparation Guidelines in preparing the manuscript before submission.

1. Language

   The language of the manuscript must be English (American English, e.g. "color" instead of "colour").

2. Length of Paper

   The length of the paper should not exceed 30 pages (Times New Roman, 12 Font) excluding tables, figures, references and appendices (if any). Articles should be typed in double-space (including footnotes and references) on one side of the paper only (preferably Letter size) with 1 inch margin. Authors are urged to write as concisely as possible, but not at the expense of clarity.

3. Title Page

   The title page should include: (i) A concise and informative title, (ii) The name(s) of the author(s), (iii) The affiliation(s) and address(es) of the author(s), and (iv) The e-mail address, telephone and fax numbers of the corresponding author.

4. Abstract

   Please provide an abstract of 200 to 250 words. The abstract should not contain any undefined abbreviations or unspecified references. The content of abstract must include Purpose, Design/Methodology/Approach, Findings, and Research Implications.

5. Keywords and JEL Classification Code

   Please provide 4 to 6 keywords which can be used for indexing purposes.

6. Acknowledgement

   The author may use acknowledgement section in the title page of the paper (if any).

7. Subdivision of the article

   Divide your article into clearly defined and numbered sections. Sections should be numbered in Roman numerals (e.g., I, II). Subsections should be numbered using the decimal system (e.g., 1., 1.1., 1.1.1., 1.1.2., 1.2., …, 2., 2.1.). The abstract is not included in section numbering.

8. Table and Figure

   Present tables and figures within the article, not at the end of the article. Please note that the article will be published in black and white (print), although online version will contain the colorful figures (if any). However, the color print will be available in extreme cases as per the request of the author.

9. References

   Author(s) should follow the latest edition of APA style in referencing. Please visit www.apastyle.org and https://owl.english.purdue.edu/owl/ to learn more about APA style.

   ### ■ Citations in the text

   Please ensure that every reference cited in the text is also present in the reference list (and vice versa).

   ### ■ Reference List

   References should be arranged first alphabetically and then further sorted chronologically if necessary.

   ### ■ Examples:

   #### Reference to a journal publication:

   Berndt, T. J. (2002). Friendship quality and social development. *Current Directions in Psychological Science, 11*, 7-10.

   Wegener, D. T., & Petty, R. E. (1994). Mood management across affective states: The hedonic contingency hypothesis. *Journal of Personality and Social Psychology, 66*, 1034-1048.

   #### Reference to a book:

   Calfee, R. C., & Valencia, R. R. (1991). *APA guide to preparing manuscripts for journal publication.* Washington, DC: American Psychological Association.

   #### Reference to a chapter in an edited book:

   O'Neil, J. M., & Egan, J. (1992). Men's and women's gender role journeys: A metaphor for healing, transition, and transformation. In B. R. Wainrib (Ed.), *Gender issues across the life cycle* (pp. 107-123). New York, NY: Springer.

   #### Reference to a web source:

   Bernstein, M. (2002). 10 tips on writing the living Web. *A List Apart: For People Who Make Websites*, 149. Retrieved from http://www.alistapart.com/articles/writeliving

Manuscript Review Timeframe

Manuscripts will be initially reviewed by the Editor within two weeks from submission.

The Editor will contact the corresponding author with news of whether or not the submission will be advanced to the first round of blind reviews (or is being rejected as not suitable for publication in the journal).

Typically, the blind review process takes approximately six to eight weeks.

The JGBT does not process any submission that does not comply with complete requirements of submission guidelines.

Contributors of articles accepted for publication will receive a complimentary copy of the issue in which their article appears.