A Comparative Study On Value Added Tax And Economic Growth: The Cases Of China And Mexico

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Abstract

This work aims to analyze the relationship between value added tax (VAT) and economic growth in China and Mexico for the period 1991-2021. This research uses the gross domestic product (GDP) as the dependent variable, for the independent variables this research uses VAT and tax revenue. The test results indicated that for China there is a strong and positive relationship between GDP and VAT, as for Mexico the relationship although positive is not strong.

Keywords: VAT, economic growth, China, México.

Introduction

There is a long-standing support that tax collection leads to economic growth (Akanbi, 2020; Ayoub & Mukherjee, 2019; Stoilova, 2017). This study is based on Ayoub & Mukherjee (2019), and uses the GDP as the dependent variable, for the independent variables, this research uses VAT and tax revenue and examines their relation to economic growth.

Ayoub & Mukherjee (2019) explore the impact of VAT on China's economic growth from 1985 to 2016. It uses GDP as the dependent variable and examines other independent factors like population, employment, and consumer price index. The study contributes to understanding VAT's role in China's tax reform.

The evolution of VAT in Mexico has been characterized by numerous adjustments, reflecting ongoing efforts to balance revenue needs with economic and social goals. Despite various reforms, the VAT's contribution to Mexico's GDP has been historically low, indicative of structural inefficiencies within the broader tax collection system. The unique features of Mexico's TAX, such as the zero rate for essential goods, have sparked debates on its efficiency and fairness. Such provisions aim to protect the vulnerable by exempting basic needs from taxation while attempting to maintain the tax base. However, they also raise questions about the tax's complexity and the potential for evasion. (Iduñate, 2006). Originally introduced in 1980, the VAT replaced multiple federal and state taxes with a single levy, aiming to simplify the tax structure and reduce the cascading effect of sales taxes on the economy.

According to Chandra & Long (2013) VAT in China was officially adopted in 1994 as a central piece of the country's reformed tax system, replacing the industrial and commercial tax. This adoption signified a shift towards a modern taxation framework geared to encourage exports and foster economic growth. The standard VAT rate was set at 17% for most goods produced domestically, establishing the groundwork for a broad-based consumption tax. This strategic move, coupled with the implementation of export tax rebates, aimed to maintain the competitiveness of Chinese exports in the global market.

The government's policy is aimed to different problems such as unbalanced urban-rural development and inadequate rural development are the key issues in the new era of Chinese society. (Zayas et al, 2023) and export tax rebate rates to match the VAT rate further illustrates the intent to bolster export activity, which saw significant growth following the reform. However, the challenge of managing fiscal pressures due to the substantial financial burden of rebates soon became apparent, prompting adjustments to the rebate rates over time. The evolution of VAT in China, therefore, narrates a careful balancing act of fiscal policy, economic incentives, and the practical realities of government revenue needs. (Chandra & Long, 2013).

Literature review:

According to Chandra & Long (2013) VAT is an indirect tax imposed at each stage of the

production process based on the amount of value added at that stage. As it is an indirect tax similar to sales tax, the World Trade Organization (WTO) allows its member countries to return, up to the full amount, the VAT levied on their exported goods.

The standard VAT rate in Mexico for the year 2023 is 16%. This tax applies to most taxable goods and services within the country. Mexico does not have a lower VAT rate; however, certain goods and services such as exports, some foodstuffs, medicine, and agricultural services are subject to a 0% VAT rate. It's also important to note that there are specific rules around digital products, which have been included to ensure tax compliance for online sales to Mexican consumers. In the border regions of Mexico, a reduced VAT rate of 8% applies to encourage economic development and competitiveness. This rate is specifically for the Northern and Southern border regions and is part of Mexico's efforts to support businesses and consumers in these areas.

According to Riccardi (2018) China's VAT system, a cornerstone of its fiscal structure, has undergone significant evolution since its inception. Originally established to streamline tax collection and encourage economic reform, VAT was introduced in 1984 and significantly reformed in 1994 to become a major source of fiscal revenue, collecting over 4 trillion yuan in 2016. This reform was pivotal, marking a shift from a production-based to a service-oriented economy, underscoring VAT's role in China's economic transformation.

The 2016 VAT reform further exemplified China's commitment to refining its tax system. It expanded VAT to construction, real estate, financial, and consumer services, aiming to eliminate double taxation and boost the tertiary sector's competitiveness. While beneficial to most sectors, it posed challenges for real estate and construction, where VAT rates were higher than the previous Business Tax rates.

VAT's implementation facilitated international trade through export tax rebates, ensuring Chinese products remained competitive globally. Initially matching the VAT rate, rebates were later adjusted to alleviate fiscal pressures, demonstrating VAT's dynamic role in balancing export growth and fiscal sustainability.

The system of VAT invoices ("fapiao") underscores the rigorous administration of VAT, serving as a crucial mechanism against tax evasion. These invoices not only document transactions but also ensure tax compliance, illustrating the comprehensive nature of China's VAT system.

Overall, China's VAT system reflects its broader economic and fiscal strategies, adapting to both domestic needs and global economic trends. Its evolution from a simple tax on goods to a complex system covering a broad range of services highlights China's efforts to modernize its economy and tax system in alignment with international practiceIn China, the standard VAT rates as of 2023 are 13%, with reduced rates of 9% and 6% applicable to specific types of goods and services. Additionally, a preferential rate of 1% has been introduced for small-scale taxpayers,

replacing the previous rate of 3%. This adjustment is part of China's ongoing efforts to support small businesses and stimulate economic activity.

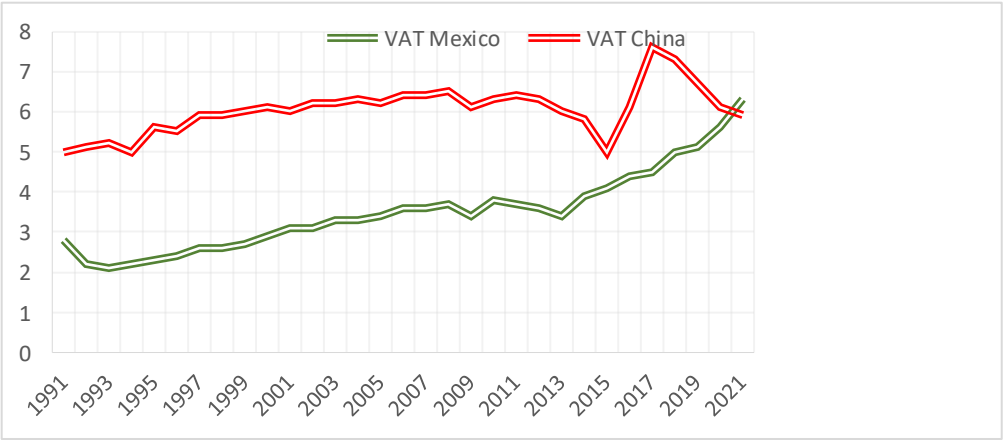
According to Ojeda (2022) VAT in Mexico, introduced in 1980, represents a critical element of the country's tax framework, aimed at broadening the tax base and enhancing fiscal revenues. Initially set with a general rate of 10%, and a reduced rate for border regions at 6%, the IVA has undergone several reforms to adapt to the evolving economic and social landscape of Mexico. Notably, the 2014 reform aligned the border region rate with the general rate and adjusted the general rate to 16%, signifying a pivotal moment in Mexico's tax policy aimed at simplifying the tax system and reducing disparities in tax rates across regions.

Despite these reforms, challenges persist in achieving tax efficiency and equity. The IVA's structure, with exemptions and zero-rated goods, aims at social equity by lessening the tax burden on essential goods. However, this approach also introduces complexities in tax administration and compliance, highlighting the delicate balance between tax efficiency, revenue generation, and social equity. Moreover, the reliance on IVA as a significant revenue source underscores the need for continuous evaluation and adjustment of tax policies to ensure they align with Mexico's broader economic and social goals.

In addressing these challenges, Mexico's experience with the IVA offers valuable insights into the complexities of implementing a broad-based consumption tax in a developing country

context. The evolution of the IVA reflects efforts to refine the tax system to support economic development, fiscal sustainability, and social objectives, illustrating the dynamic nature of tax policy in responding to changing economic realities and societal needs. China has consistently had a higher percentage of VAT with respect to GDP until 2021 where Mexico surpassed China

Image 1 VAT as percentage of GDP in China and Mexico



Source: Data from OECD 2023.

Data and Methodology:

The data we use in this study are annual time series in the period 1991-2021 for Mexico and China. This study uses variables such as tax revenue, VAT and GDP. This study uses data from the World Bank, Organization for Cooperation and Development and the National Statistics Office of China and Mexico. This research aims to reveal the relationship between variables by using Auto-

regressive Distributed Lag (ARDL) using the software Python. The model of this research is the following:

$$\Delta(GDP) = \pi r^2 = \beta_0 + \beta_1(GDP) + \beta_2(IVA) + \beta_3(Re)$$

$$\Delta Ln(GDP) = \beta_0 + \beta_1 Ln(GDP) + \beta_2 Ln(IVA) + \beta_3 Ln(Re) + e$$

Where: GDP is gross domestic production (In millions annually); VAT is the value added tax (millions annually); Re is the tax revenue of China/Mexico; and e is the stochastic error term.

Unit root test. As for empirical research, we are using time series data, for analysis study, the essential step is stationary test step, and in stationary test they have different econometric and statistical techniques. In our case we choose the unit root test depending on the technique of Phillips Peron (PP) (1988); Also Dickey-Fuller (ADF) is among the critical tests to test the stability of data. The goal of this step is to find a stationary and stable result. Table 1 shows the result of a stationary test using the ADF test.

Table 1. The result of the root test of the ADF unit in Mexico

Variables	**Level t value**	**Level Note**	**1st Difference**	**1st Difference Note**
GDP	-0.242323	Non-stationary	-0.432184	Non-stationary
Tax revenue	-13.873387	Stationary	-2.619970	Non-stationary
VAT	-3.181254	Stationary	-2.514358	Non-stationary

Table 2. The result of the root test result of ADF unit in China

Variables	Level t-value	Level Note	1st Difference	1st Difference Note
GDP	2.420225	Stationary	-2.896229	Stationary
Tax revenue	-1.113387	Non-Stationary	-5.219970	Stationary
VAT	4.951669	Stationary	2.996790	Stationary

According to the t-value test, we can accept or reject the null hypothesis of stationary and non-stationary. The stationary results indicate and show that the model has no problem (See Table 1 and 2). The test is used in this research to investigate a simple integration between the model variables.

Table 3. The Long Run Relationship Mexico

Variable	Coefficient	T-value	p-value
Ln_GDP	0.151310	1.393244	0.175344
Ln_VAT	0.174674	1.237234	0.227058
Ln_Tax_Revenue	-0.237963	-2.017179	0.054112

Table 4. The Long Run Relationship China

Variable	Coefficient	T-value	p-value
Ln_GDP	2.796607	10.07960	0.175344
Ln_VAT	7.564233	5.166709	0.227058
Ln_Tax_Revenue	-0.237963	-2.017179	0.054112

As form Mexico the coefficient of Ln_GDP shows a positive but not statistically significant relationship with the change in GDP in the long term. The coefficient of Ln_VAT also indicates a positive but not statistically significant relationship with the change in GDP. The coefficient on Ln_Tax_Revenue suggests a negative relationship and approaches statistical significance (p-value of

0.054112), indicating that an increase in tax revenue is associated with a decrease in GDP variation in the long run, although This result is not statistically significant. at the conventional level of 5%. While for China, Table 4 shows that there is a positive relationship between VAT and GDP.

Conclusion

The exploration of the Value Added Tax (IVA) systems in Mexico and China reveals a compelling narrative of fiscal strategy and economic policy adaptation in response to both domestic and global economic pressures. These systems illustrate how VAT can be a versatile tool for revenue generation, while also serving as a mechanism for economic policy implementation. The examination of the VAT systems in these two distinct economies highlights the nuanced approaches taken to address specific economic challenges and objectives, underscoring the importance of context in the design and reform of tax policies.

In Mexico, the IVA, introduced in 1980, has been a cornerstone of the country's fiscal strategy, aimed at diversifying revenue sources beyond oil and reducing dependency on direct taxation. Over the years, Mexico has utilized the IVA to address economic disparities, adjust to NAFTA implications, and strive towards social equity through various exemptions and reduced rates for essential goods and services. The adjustments in the IVA rates and the application in border regions reflect Mexico's efforts to balance economic competitiveness with revenue needs. Despite these efforts, challenges in tax evasion,

administration, and compliance highlight areas for further reform and improvement.

China's adoption of the VAT in 1994 marked a pivotal shift towards modernizing its tax system, aligning with its broader economic reform and opening-up policies. The transformation of China's VAT from a production-based to a consumption-based tax in 2016 was a significant step towards reducing the tax burden on businesses, encouraging consumption, and fostering economic growth. This reform not only streamlined the tax system but also aimed to enhance China's competitiveness in the global market. The Chinese VAT system, with its rebates for exports and varying rates for different sectors, demonstrates a strategic approach to using tax policy as a lever for economic management.

The current findings suggested that the ARDL model test the signification relationship between the variables. The VAT system's evolution in both Mexico and China illustrates the dynamic interplay between fiscal policy, economic development, and social objectives. These cases underscore the significance of continuous evaluation, adaptation, and reform of VAT policies to ensure they remain effective in meeting changing economic conditions and priorities. Furthermore, they highlight the critical role of administrative efficiency, compliance mechanisms, and international cooperation in maximizing the benefits of VAT systems.

In conclusion, the VAT systems in Mexico and China offer valuable lessons on the potential and challenges of utilizing consumption taxes as tools

for fiscal and economic policy. The experiences of both countries emphasize the need for policy designs that are responsive to economic realities, administrative capabilities, and social needs. As the global economy continues to evolve, the insights gained from the VAT policies in Mexico and China will undoubtedly contribute to the ongoing discourse on effective tax policy design and implementation in the quest for sustainable economic growth and development.

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