Causal Relationship Among SME’s Import, Export, Deposits, and Small Manufacturing Contribution to GDP – Toda Yamamoto Analysis

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ABSTRACT

The purpose of the study was to identify the causal relationship between Pakistani SMEs’ imports, exports, domestic deposits, and GDP in the small manufacturing sector over 2007-Q1 to 2020-Q4. Granger causality is a revolutionary and cutting-edge econometric technique that was presented by Toda and Yamamoto (1995). This technique enabled us to identify various kinds of observations, all of which are discussed in detail in the concluding part of the article. Four causal relationships among the variables which revealed the empirical results. (i) Fluctuations in exports values, total imports values and deposit in domestic currency may cause the changes in GDP of small manufacturing sector in Pakistan (ii) Fluctuations in GDP of small manufacturing and deposits in domestic currency may cause the changes in total exports value in SME sector in Pakistan while changes in total imports value do not make the cause of changes in total exports value in Pakistan SME sector (iii) fluctuations in GDP of small manufacturing and total exports value may cause the changes in total imports value in SME sector in Pakistan while changes in deposit in domestic currency do not make the cause of changes in total imports value in SME sector in Pakistan and (iv) fluctuations in GDP of small manufacturing, total exports value, and total import values do not make the cause of changes in deposit in domestic currency in SME sector in Pakistan. Using secondary data and an estimation method to take into account new factors, the study also makes a big contribution to the ongoing research on SMEs in Pakistan.

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1. Introduction

Small Medium Enterprises (SMEs) are crucial to a country’s progress because of the jobs they generate, the growth of the domestic economy, and the alleviation of poverty they bring. The importance of these enterprises cannot be overstated, particularly for economies still in progress. According to Bauchet & Morduch (2013) and Savlovshi & Robu (2011), SMEs have consistently...
outperformed their companies due to their agility and speed. Small and medium-sized businesses (SMEs) are good for economies all over the world because they make people think of new ways to use community resources. Through imports and the price of goods, SMEs are an essential gear in the global economic success engine. They play a substantial part in the global economy by significantly increasing GDP and the standard of living in countries all over the world. Additionally, it alleviates poverty because it generates more jobs in different economies than major corporations (Oba and Onuoha 2013). One of the most striking reasons for the exceptional economic progress of modern nations is the abundance of SMEs (De Giorgi and Rahman 2013). According to Littlewood & Holt (2018), when it comes to addressing income inequalities, increasing inventiveness and profitable businesses, and combating hunger, it is just the SME sector that makes the biggest impact. SMEs are the backbone of the Pakistani economy, just as they are in other emerging and developing nations. The SME business sector is playing a crucial role in driving the economy forward, fostering technical innovation, encouraging economic regeneration, providing a supply chain for large enterprises, and advancing society. All kinds of commercial enterprises can benefit from their development in both urban and rural settings. The establishment and growth of such enterprises is producing revenue, creating jobs, and helping to reduce poverty. Therefore, the contribution to economic growth by SMEs in outlying urban areas is mostly attributable to their ability to create new jobs (Grimes 2000; Oyelana and Adu 2015). The SME sector has many obstacles in developing nations, including a lack of money and financial prospects, loans with high-interest rates, outdated infrastructure, and limited access to current technologies, as well as weaker trade and investment prospects. It is important to recognise that, despite all the challenges, SMEs have a significant impact on the economy, helping to raise employment rates and people's standard of life. According to the most recent survey data we have for Pakistan (the Economic Census of Pakistan in 2022), the country is host to more than 5 million enterprises. SMEs are responsible for 40% of Pakistan's GDP and 25% of its total exports. When it refers to the share of the labouring population that it employs, the SME employs only often less people than the agricultural sector. The small and medium-sized enterprise sector accounts for 78% of all private sector jobs. Small and medium-sized enterprises (SMEs) are critical to alleviating poverty, growing national economies, and creating new jobs. Rising SME finance may be traced back to 2013 and the different regulatory measures and facilitative roles taken by SBP. SME lending was Rs 524 billion in December 2021, up from Rs 284 billion in December 2013. Still, market flaws, high processing costs, and the fact that SME owners and entrepreneurs can’t get loans without real collateral are structural barriers that keep banks from lending to SMEs (SBP 2022). Various researches have been carried out to investigate the relationship that exists between the success of SMEs and the state of the economy (Aina and RTP 2007; Cravo, Gourlay, and Becker 2012; Kongolo 2010; Minniti and Levesque 2010; Spencer and Gomez 2004). Academics from both developing and advanced economies have studied SMEs (Eze and Okpala 2015; Harrison and Baldock 2015; Kandasamy et al. 2015; Van Stel, Carree, and Thurik 2005). Policymakers and academics have been interested in SMEs for decades, but there has been a lack of studies analysing the relationship between SMEs and economic growth in developing nations, and in Pakistan in particular. A systematic in-depth analysis of the current situation of Pakistan's small and medium-sized enterprise (SME) market is essential, and timely implementation of the growth elements is required to ensure the country avoids disaster. The results of studies that look into how SMEs help the economy grow as a whole always seem to have a massive effect on the growth and management of SMEs in the years to come. Various studies have been conducted on the effect of SMEs on GDP growth, and their findings have been contradictory. They also found evidence that threatened SMEs' status as the solution for economic growth and job creation (Kadiri 2012). Primary data have also been used in a few other studies about the significance of SMEs in the growth of the economy (Qureshi and Herani 2011; Shaikh, Shafiq, and Shah 2011). For the purpose of doing empirical research, this study depends primarily on secondary sources because there is a deficiency of previous secondary research conducted.
in Pakistan on the subject of interest. This study extends the current body of information on SMEs by analysing the role that SMEs play in supporting the economic boom.

2. Literature Review

According to Tambunan (2006), the classical school of thought and the modern school of thought are the two primary schools of thought that predominately in the discussion of the role that SMEs play in the general development of underdeveloped countries. The phrase "classical" is used to characterise a series of hypotheses about the growth of SMEs, which encompass a broad variety of literature, including Anderson (1982) and Morse & Staley (1965). These theories have been around for a long time and are considered to be quite reliable. "Classical" economic theories predict that large businesses will eventually contribute to economic growth and raise incomes, while small and medium-sized businesses (SMEs) will see their revenues and gains decline. According to "current conceptions," the SME sector serves dual, complementary functions. By adding more to GDP, they speed up economic growth, and by creating new jobs and the unique effects of income growth, they help reduce poverty. The growth of SMEs also contributes to GDP and alleviation of poverty. Increases in employment and output in SMEs have a multiplier effect on the economy, affecting GDP and poverty alleviation in three main areas: manufacturing, finance, and retail. The World Bank (2018) proposes three primary pieces of evidence in support of the SME sector in developing nations. All of these arguments are congruent with the "modern" perspective on the relevance of the SME sector of the economy. The first argument asserts that the SME sector is essential to the growth of the economy. The contemporary version of the economic theory of SMEs serves as the conceptual underpinning for this study.

The large majority of authors agree that SMEs play a crucial role in the expansion of the nation’s economy. Miller (1990) suggests that small businesses create more new jobs than large ones do. Increasing employment is a direct result of enterprise expansion and new venture formation. The significance of SMEs in the economy of West Virginia was highlighted in a study conducted by Gebremariam et al. (2004). It was discovered that SMEs, the reduction of poverty, and overall economic growth all have an association with one another that is both positive and statistically significant. SMEs are very important to the economies of industrialised countries, as Rohra & Panhwar (2009) rightly point out. A similar finding was made by Mateev & Anastasov (2010), who investigated the effect of SMEs on economic growth in Eastern and Central Europe. They discovered that an increase in the number of prospering SMEs is an indication of economic expansion. Both Wen (2011) and Ayanda & Laraba (2011) contended that the increase and growth of the SME sector is linked to the growth of the national economy, claiming that this has served as a foremost accelerator in the development of rural areas. Researchers also contended that the expansion and expansion of the SME sector is linked to the growth of the economy. It was also widely recognised that the expansion of the economy, the elimination of poverty, and the reduction in the inequality between income levels were all consequences of the initiatives of SMEs. Dixit & Kumar Panday (2011) made the supposition that SMEs in the Indian economy from 1973 to 2007 would play a vital role in the expansion of India’s economy. They found that there is a correlation between the effectiveness of SMEs and the expansion of the GDP. Despite this, a few studies have concluded that the growth of SMEs contributes virtually nothing to economic expansion. The study by Kadiri (2012) analyses the function that SMEs play in the expansion of the labour market. In order to analyse the results, he used the binomial logistic regression technique. The findings suggest that SMEs do not make a major contribution to the expansion of the economy because the government does not provide them with adequate assistance or obligations. Vijayakumar (2013) discovered, through the use of time series data, that there is a negative and significant relationship between SMEs and the growth of the economy in Sri Lanka. But, Uma (2013) did an identical study in India and came to the conclusion that SMEs are essential to economic growth and represent a precise
solution to contemporary challenges like poverty, unemployment, instability, and overpopulation. Oyelana & Adu (2015) examined the effects of SMEs on the South African economy and culture. Their research suggests that SMEs contribute significantly to the effort to reduce poverty and generate new employment opportunities. Ilegbinosa & Jumbo (2015) examined the function that SMEs perform in the growth of the Nigerian economy. The dependent variable in this analysis is real GDP, and the regressors are inflation, interest rates, and the availability of credit to SMEs. The data showed that there was a favourable and significant association between SMEs and growth when certain businesses had better access to finance. The findings of the authors’ research led them to the conclusion that SMEs make a major contribution to the expansion of the national economy. Further research on the link between SMEs and the growth of GDP in Nigeria has shown that SMEs have a favourable and considerable impact on the country’s economic expansion (Folorunso et al., 2015). The growth of the entire economy is also greatly influenced by the expansion of SMEs. This segment is responsible for the creation of around four million jobs each year. Additionally, the industry employs both unskilled and semi-skilled rural communities, which helps to raise living standards. Consequently, it is worthy of praise that SMEs are substantial contributors to the gross domestic product (GDP), international trade, and industrial production of the nation (Perwaiz 2015). According to Karadag (2016), SMEs make a substantial contribution to the growth of both society and the economy. According to Neagu (2016), SMEs play an important part in the current economy, and it has been demonstrated that they are a large and profitable source of innovation. Neagu argues that SMEs are essential to the modern economy. As a result, one might draw the conclusion from the body of previously published research that studies of the effect of SMEs on economic growth have shown mixed results. Pakistan is a country where much research has used descriptive statistics, although the results have often been unclear (Qureshi and Herani 2011). Researchers have only applied econometric methods in a few studies, and they haven’t analysed in detail the time-series characteristics of the data. The literature again emphasises that previous studies addressed the issue of a small sample size affecting the credibility of their conclusions. So, the goal of this study is to make up for the problems found in the literature by making the study period longer and using strict econometric methods.

3. Research Methodology

There have been many different hypotheses proposed to explain economic growth, including all of those proposed by Barro (1991), and Mankiw et al. (1992). Numerous professionals and academics have relied on these models for decades, and they provide a theoretical framework for analysing data that may be used to stimulate economic growth. Growth literature for conventional factors like capital, labour, and technology has also advanced as a result of this change. The growth framework also includes measurements of other variables. In the same way, the present research adopts the methodology of Cravo et al. (2012) to focus on the contribution of SMEs to Pakistan’s economic growth. This study will be based on the following conceptual framework.

\[
GDPSM = \beta_0 + \beta_1 (SMSEXPV) + \beta_2 (SMEIMPV) + \beta_3 (DDC) + \varepsilon \quad \ldots \quad (A)
\]

Here, GDPSM representing the GDP of small manufacturing (Pak Rs. in million), SMSEXPV as total SME exports value (Pak Rs. in million), SMEIMPV as total imports (Pak Rs. in million), and DDC is deposit in domestic currency (Pak Rs. in million). The variable selection is entirely based on available data for Pakistan SME sector sourced from OECD database.

This research has never been carried out in the same manner in Pakistan. Toda & Yamamoto (1995) novel econometric Granger causality approach were modified for use in estimating the standard model. To top it all off, no other research has ever attempted a secondary data base study in the SME
sector in Pakistan using the Granger causality method, thus the results will undoubtedly be original.

4. Estimations and Results

Table 1 - Unit-Root Test Results

<table>
<thead>
<tr>
<th>Variables</th>
<th>ADF</th>
<th>Phillips-Perron</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>I(0)</td>
<td>I(1)</td>
</tr>
<tr>
<td>GDP of Small Manufacturing</td>
<td>0.0857</td>
<td>0.7057</td>
</tr>
<tr>
<td>Deposit in Domestic Currency</td>
<td>0.9876</td>
<td>0.1899</td>
</tr>
<tr>
<td>Total Export Value</td>
<td>0.1790</td>
<td>0.3024</td>
</tr>
<tr>
<td>Total Import Value</td>
<td>0.7245</td>
<td>0.9393</td>
</tr>
</tbody>
</table>

Estimations made by the researcher using EViews 11

Toda & Yamamoto (1995) postulated that economic series might be either integrated across orders or non-cointegrated, or even both. Granger causality tests based on the ECM are inapplicable in such cases. Thus, they devised a different test that works whether $Y_t$ and $X_t$ are non-cointegrated, cointegrated by arbitrary order, or I(0), I(1), or I(2). Specifically, this is the increased Granger causality proposed by Toda & Yamamoto (1995). This method permits asymptotic-theory-based examination of causation between integrated variables.

4.1 Var Lag Order Selection Criteria

The log-length criteria confirm that majority of the methods such as LR, FPE, AIC, and HQ confirm the lag-length 6 while only SC method expose the lag-length criteria as 2. hence, we select 6 as the lag-length criteria for further analysis.

4.2 Johansen Cointegration Test

According to outcomes of Johansen Cointegration test, both Trace and Max-eigenvalue tests confirm 3 cointegrating equations. The results confirm that there is log-run association among all the variables chosen in this model for estimations.

Table 2 - Var Granger Causality or Block Exogeneity Wald Tests

<table>
<thead>
<tr>
<th>Dependent variable: GDP of Small Manufacturing</th>
<th>Excluded</th>
<th>Chi-sq</th>
<th>df</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Export Value</td>
<td>53.33423</td>
<td>6</td>
<td>0.0000</td>
<td></td>
</tr>
<tr>
<td>Total Import Value</td>
<td>13.57776</td>
<td>6</td>
<td>0.0347</td>
<td></td>
</tr>
<tr>
<td>Deposit in Domestic Currency</td>
<td>19.78672</td>
<td>6</td>
<td>0.0030</td>
<td></td>
</tr>
<tr>
<td>All</td>
<td>121.6773</td>
<td>18</td>
<td>0.0000</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Dependent variable: Total Export Value</th>
<th>Excluded</th>
<th>Chi-sq</th>
<th>df</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>GDP of Small Manufacturing</td>
<td>28.09914</td>
<td>6</td>
<td>0.0001</td>
<td></td>
</tr>
<tr>
<td>Total Import Value</td>
<td>1.960338</td>
<td>6</td>
<td>0.9233</td>
<td></td>
</tr>
<tr>
<td>Deposit in Domestic Currency</td>
<td>18.13628</td>
<td>6</td>
<td>0.0059</td>
<td></td>
</tr>
<tr>
<td>All</td>
<td>71.08002</td>
<td>18</td>
<td>0.0000</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Dependent variable: Total Import Value</th>
<th>Excluded</th>
<th>Chi-sq</th>
<th>df</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>GDP of Small Manufacturing</td>
<td>23.82055</td>
<td>6</td>
<td>0.0006</td>
<td></td>
</tr>
<tr>
<td>Total Export Value</td>
<td>17.60913</td>
<td>6</td>
<td>0.0073</td>
<td></td>
</tr>
<tr>
<td>Deposit in Domestic Currency</td>
<td>9.399819</td>
<td>6</td>
<td>0.1523</td>
<td></td>
</tr>
</tbody>
</table>
The above table revealing Granger causality proposed by Toda and Yamamoto (1995) estimations. According to results, change in total exports values, total imports values and deposit in domestic currency may cause the changes in GDP of small manufacturing sector in Pakistan. Change in GDP of small manufacturing and deposits in domestic currency may cause the changes in total exports value in SME sector in Pakistan while changes in total imports value do not make the cause of changes in total exports value in Pakistan SME sector. Changes in GDP of small manufacturing and total exports value may cause the changes in total imports value in SME sector in Pakistan while changes in deposit in domestic currency do not make the cause of changes in total imports value in SME sector in Pakistan. Lastly, changes in GDP of small manufacturing, total exports value, and total import values does not make the cause of changes in deposit in domestic currency in SME sector in Pakistan.

5. Conclusion

This study reveals the empirical relationship among total exports value, total imports value, deposits in domestic currency, and GDP of small manufacturing in SME sector in Pakistan over the period 2007 to 2020. The quarterly data was explored from OECD database. The overall outcomes confirms that the data is not stationary at level and first difference but stationary at 2nd difference. Using Granger causality proposed by Toda & Yamamoto (1995) econometric technique, we estimate the four-causal relationship among the variables which revealed the empirical results. (i) fluctuations in exports values, total imports values and deposit in domestic currency may cause the changes in GDP of small manufacturing sector in Pakistan (ii) fluctuations in GDP of small manufacturing and deposits in domestic currency may cause the changes in total exports value in SME sector in Pakistan while changes in total imports value do not make the cause of changes in total exports value in Pakistan SME sector (iii) fluctuations in GDP of small manufacturing and total exports value may cause the changes in total imports value in SME sector in Pakistan while changes in deposit in domestic currency do not make the cause of changes in total imports value in SME sector in Pakistan and (iv) fluctuations in GDP of small manufacturing, total exports value, and total import values does not make the cause of changes in deposit in domestic currency in SME sector in Pakistan. According to the results, the government of Pakistan could increase the value of its exports, import more technology and fewer luxury goods, and increase domestic deposits to increase the gross domestic product of its small manufacturing sector.

Reference


