Business Cycle and Small Business

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The authors present the object of small business during the business cycle. The article deals with a deep analysis of the economic indicators of small business, and the behavior of small business during the business cycle. There are pointed out two main economic indicators – the GDP and the ratio of employment. There are used statistical data to compare the impact of small business on the whole economy in Lithuania and in the USA. This study focuses on the behavior of small business compared to large business and tries to discern if there are differences in their activities related to cyclical changes in economy. Consequently, this study will attend to isolate general cyclical relationships rather than focus narrowly on small business activity over the months of recession.

There is analyzed the period of 1999-2004 in Lithuanian economy – there is made the analysis of part of the whole Lithuanian GDP created by small business in enterprises with less than 250 employees; value added wealth created by small business relative to industry; also there is shown the relation of employees in small business related to different business sectors.

Different industries do react differently to cyclical changes. Some of the most cyclically sensitive industries, such as construction, are predominantly small businesses. Services industries, which produce a large proportion of small business GDP, tend to be less sensitive to the cycle than most other sectors. It is well-known that certain industries are more prone to cyclical volatility than others. Since the distribution of small businesses across industries is more different than the distribution of large businesses across industries, the differences in the coefficients relating small and large business GDP to overall GDP could be the result of either a business-size or an industry differential.

In this article the authors made a conclusion, that small business is less sensitive than large business. The tendency for small businesses to show less sensitivity than large businesses could be explained in a couple of ways. First, this outcome could still be related to differences in industrial mix. Even within these industrial sectors there are industrial sub-sectors that could be expected to react differently to cyclical behavior, and there may be difference in the small and large business shares in those sub-sectors. Secondly, there may be "capacity utilization" differences in how workers are employed in small and large businesses. Large businesses, having several people who do similar jobs, may be more able to remove some people from the payrolls than are small businesses that may have only one or two people doing a specific job. Large businesses are also much more likely to have a variety of businesses in which they are involved. Therefore, in a downturn, for example, large businesses are more likely to shut down or sell an unprofitable division or sub-sector of their businesses than are small businesses. That results in relatively large changes in employment at one time.

Keywords: business cycle, small business, movement of GDP during the business cycle, employment.

Introduction

The cyclical behavior of economy is a focus of research. Research has focused on the impacts economic cycles may have on businesses of different sizes. The recent recession has made it clear that businesses of all sizes are impacted by an economic downturn. However, there is no reason to believe that the impacts of a downturn are identical on large and small businesses. If large and small businesses do react differently to downturns or expansions in economy, is there an explanation of these differences? This study focuses on the behavior of small business compared to large business, and tries to discern if there are differences in their activities related to cyclical changes in economy. Consequently, this study will attempt to isolate general cyclical relationships rather than focus narrowly on small business activity over the months of recession. The primary variable that will be studied is GDP by business size, overall and by industry. Other variables, that could be expected to show some differences in cyclical behavior, will also be examined. Several cyclical indicators will also be studied to see if they are helpful in providing insights to the cyclical changes in small business, or if they can be used to provide indications of change in small business GDP.

Economic cycles are defined primarily by fluctuations in employment and output. The literature on the relationship of cyclical economic activity to businesses by size is limited. General macroeconomic studies on cyclical behavior focus, almost exclusively, on comparing macro-variables to
macro-variables in an attempt to explain cyclical behavior. While the theoretical basis for what has traditionally been referred to as the business cycle is of interest in trying to understand cyclical impacts on small businesses. None of the most recent business cycle literature has focused on impacts by business size. It is also important to note, that while the nomenclature of the "business cycle" seems to imply regularity in economic ups and downs, current theory would refute that idea. Current thinking is that the economic "cycle" is the natural pattern of an adjustment process that is triggered by a variety of shocks to the economy. It is likely that the adjustment process does not work in the same way each time and that it may not impact businesses in the same way each time.

The theory of business cycles has evolved over the past few decades. For the most part, current business cycle theorists agree that cycles result, not from a naturally recurring cycle in economic variables, but from unexpected shocks to the economy. The appearance of a cycle comes from the tendency of economic variables to adjust to random shocks in a manner that results in a cyclical pattern. While economists may agree shocks are the main cause of cyclical behavior, they do not agree on which shocks will cause cyclical behavior in major macroeconomic variables. Nor do they agree on exactly how those shocks are transmitted throughout the economy. Real Business Cycle theorists believe that it is the deviation of productivity from its expected levels, also referred to as technological shocks, that leads to the cyclical adjustment pattern. However, that is not a universally accepted explanation. Even were it true, it leaves the reason for the productivity deviation unexplained. With the transmission mechanism and the cyclical trigger(s) still unidentified, there have been no studies that have broadened the theories to explain a differential impact on businesses by business size.


Lithuanian economy sooner or later will face the problem of business cycle. As a large part of GDP is created by small business, so it is very important to research the business cycle. Then having conclusions of such research it could be possible to predict possibilities for faster growth of Lithuanian economy.

Object of research – business cycle and small business.

Aim of the article – to determine the relation between business cycle and economic indicators of small business; to compare small business during business cycle in Lithuania and in the USA.

Scientific innovation – the article develops and estimates the role of small business during business cycle. It indicates significance of small business in all the economy.

Methodology of research – systematic analysis of scientific economic and statistical literature, methods of mathematical comparison and generalization.

Movement of Small Business GDP during the Business Cycle

This study can only look at the relationship of the movement of small business and large business GDP during the overall business cycle. GDP by business size has been calculated for the period 1958 through 1999 for six major industrial categories. The calculations are done for industry GDP as a whole, and its major value added components: compensation, net interest, indirect taxes and nontax payments, capital consumption and profit-type income. The latter four are the noncompensation portion of GDP. Total GDP, compensation, and noncompensation are the data used for the first part of the analysis.

Several major questions could be asked. However, the main one is how does small business GDP compare to large business GDP during the business cycle? And, do the major subcomponents of GDP, compensation and noncompensation, exhibit patterns that provide information about the relationship of the totals?

The first step in looking for possible cyclical relationships is to look at what has happened to GDP by business size during the business cycles of the past few decades. Figure 1 shows the ratio of small private nonfarm business GDP to large private nonfarm business GDP over the 1958-99 time period for which the data are available. Also marked on the Figure are the turning points of economic activity, the peaks and troughs of the business cycle, as identified by NBER.
When the ratio in Figure 1 is equal to 1, the nominal value of small business GDP is equal to large business GDP. The ratio was at a high of 1.3 in 1958, during a period of strong small business activity. Its low point is 0.96 in 1982, indicating that small business GDP was smaller than large business GDP. Since the early 1980s, the ratio has moved above one again. From Figure 1, there is no immediately noticeable pattern in the ratio related to the turning points of the business cycle. The longer – term trends in the ratio are the most dominant factors.

To better focus on potential cyclical patterns, the movement of the small to large business ratio is compared during the expansion phase of several recent business cycles. Figure 2 shows a comparison of the small to large business ratio for six of the business cycles of the past forty-five years. The ratio is set equal to 1.0 in the year of the trough of each business cycle and the relative movement in the ratio is tracked through the expands until the year of its peak. During 1958, 1961, and 1975 expansions, small business lost ground relative to large business. In 1970, 1982, and 1991 expansions, small business maintained its share or gained a bit.

The relationships in Figure 2 do not indicate a "typical" pattern in small business activity relative to large business activity during periods of economic expansion. It would be helpful to also look at the recessions, but they are too short to analyze in this manner.

These results indicate somewhat less cyclical volatility for small businesses, in that the magnitude of the changes in small business GDP is smaller than for the overall economy. However, the results also imply that, on average, a percentage point increase in the overall growth in the economy is associated with a smaller percent increase in small business output. Therefore, when current dollar growth rates are quite low, as they would be during a recession, small business growth rates would be even lower. When growth rates are quite high, such as during a rapid expansion, small business growth rates would again be lower than those of the economy overall.

As with Figures 1 and 2, it is not obvious from these results if the relationship is being influenced primarily by business size or by industry. It is well – known that certain industries are more prone to cyclical volatility than others. Since the distribution of small businesses across industries is more different than the distribution of large businesses across industries, the differences in the coefficients relating small and large business GDP to overall GDP could be the result of either a business-size or an industry differential. Consequently, a further analysis of these data is done in two-steps. The first step is to look at the relative fluctuation of each of the six industry sectors to the cyclical movement in total private nonfarm GDP. This provides a basis for understanding which of the industrial sectors is more cyclical than the overall economy, and which are less cyclical. The second step is to look for cyclical patterns by business size within each industry sector. Therefore, the relative fluctuation of the large business and small business components in each of the six sectors are compared to the fluctuations in GDP for the industrial sector of which they are a part.

The importance of Lithuanian small business to the whole economy could be seen in Figure 3.

![Figure 3. Part of the whole Lithuanian GDP created by small business in enterprises with less than 250 Employees, %.
Source: Public Institution “Statistical research”

In 2002 small and medium enterprises (less than 250 employees) made up 99.5 percent. And GDP created by them was only 62.6 percent of the whole GDP. Changes of small business GDP through the period of 1999-2002 were very unequal and there was no tendency to the growth of the whole GDP. The main reasons were structural changes in Lithuanian economy and Russian crises.

The Relation of Business Size GDP to Industry GDP

From the industry analysis shown in Table (the results are estimated for the period 1958-1999), it is already known that the construction industry is more cyclically sensitive than the overall economy. The coefficient on the large business component is less than one. It is a less cyclically sensitive business size sector within this industry. The mining and manufacturing results show the opposite relationship, with large business being more cyclically sensitive than small businesses. Although in that industry both business sizes are within one standard deviation of unity.

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<tr>
<th>Table Movement of Small Business GDP and Large Business GDP Relative to the Industry of which they are part</th>
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<tr>
<td><strong>R-Square</strong></td>
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<td>Mining and Manufacturing</td>
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<td>Construction</td>
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<tr>
<td>Transportation, Communication and Public Utilities</td>
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<tr>
<td>Wholesale and Retail Trade Combined</td>
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<tr>
<td>Finance, Insurance and Real Estate</td>
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<td>Services</td>
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We can compare the results of Lithuanian small business related to industry in Figure 4.

Small business is less cyclically sensitive than its over-
all industrial sector in TCPU, trade, and services. Small businesses are more cyclically sensitive than the sector overall in FIRE. That may reflect the dominance of small businesses in the real estate portion of that sector, while the banking and finance portions of the industry are dominated by large businesses. However, it should also be noted that the slope coefficients for both business sizes in the FIRE and trade sectors fall within one standard deviation of unity.

![Graph showing value-added wealth created by Small Business relative to Industry, %](image)

**Figure 4.** Value-added wealth created by Small Business relative to Industry, %.

*Source: Public Institution “Statistical research”*

The analysis of value-added sub-components highlights a few peculiarities in the results. Looking first at the compensation components, the relationship in mining and manufacturing is very similar to the relationships seen for GDP overall. Small businesses are less sensitive, and large businesses are more sensitive than the overall industry. The coefficients in construction seem to defy the relationship discussed earlier, because the compensation of both large and small businesses are shown to be more cyclically sensitive than is the overall sector. Both of the coefficients are close to one, however, indicating little difference by business size in this relationship. The coefficients for large business and small business in the trade sector are also relatively close to one, with large businesses being slightly more sensitive. Interestingly, the breakdown between wholesale and retail shows no differences by business size. Small businesses, in both the wholesale and retail sectors, are slightly less sensitive and large businesses are slightly more sensitive. The services sector shows relatively strong relationships. The movement in small business compensation is less volatile than is the movement in compensation for services overall, while large business compensation appears to be more sensitive. Since the services industry is less sensitive to cyclical changes than is the economy overall, this still does not mean that large service businesses should be considered cyclically sensitive, only that it seems to be more so than small service businesses.

The tendency for small businesses to show less sensitivity than large businesses could be explained in a couple of ways. First, this outcome could still be related to differences in industrial mix. Even within these industrial sectors there are industrial sub-sectors that could be expected to react differently to cyclical behavior, and there may be a difference in the small and large business shares in those sub-sectors. Secondly, there may be "capacity utilization" differences in how workers are employed in small and large businesses. Large businesses, having several people who do similar jobs, may be more able to remove some people from the payrolls than are small businesses that may have only one or a two people doing a specific job. Thus small business may react to slow business by that person having more slack time. Large businesses are also much more likely to have a variety of businesses in which they are involved. Therefore, in a downturn, for example, large businesses are more likely to shut down or sell an unprofitable division or sub-sector of their businesses than are small businesses. That results in relatively large changes in employment at one time.

**Employment by Business Size during the Cycle**

Small business GDP data are the only long-term series providing a dollar measure of small business output. One obvious indicator of cyclical changes in the economy is employment. In Figure 5, two measures of business size employment were examined as indicators of changes at both ends of the business size spectrum. The percentage changes in employment in establishments with fewer than 20 employees were compared with percentage changes in employment in establishments with more than 500 employees. The latter group will all be large businesses. The Figure shows similar patterns around the troughs, slower growth in employment for the small establishments, and at times, actual declines in employment for the large establishments. Both groups also tend to show their largest percentage increases in employment somewhat before the peak in the cycle. However, there may be several establishments in the 500+ employee group at the top of the expansion that drop down into a group with fewer employees during a recession. Establishments with fewer than 20 employees will usually stay in that group during a recession unless the business
closes. (Although some establishments might move up to a group with more employees in expansionary times.) The pattern of the two groups is very similar during the cyclical changes in the economy.

Although the smaller business sizes do not seem to show declines in employment during the downturns, they do show periods of no employment change at the troughs. Total employment does sometimes decline. This pattern may indicate that small businesses are more likely to hoard employees during a downturn than larger businesses, rather than go to the expense of hiring and retraining when times improve.

**Figure 5.** Annual Percent Change in Employment of Establishments with fewer than 20 Employees and more than 500 Employees

*Source: SBA Office of Advocacy*

In Lithuania there could be seen the tendency that most of employees are employed in small business work in trade, industry and services sectors (Figure 6).

The relationship between the percent change in the number of self-employed individuals and the percent change in small business GDP was also not strong. Nor, interestingly, was the relationship between the percentage change in the number of self employed and the percentage change in proprietors' income. The cyclical pattern of changes in self-employment is not obvious. Self-employment tends to grow during years coinciding with the trough of a recession. That undoubtedly reflects self-employment as an option to unemployment during periods of poor business conditions. However, during periods of strong GDP growth, self-employment sometimes increases and sometimes it decreases. This reflects two forces as work. Strong growth periods provide favorable conditions for entrepreneurs to start small businesses.
But, strong growth periods also provide more opportunities for alternative employment. The GDP by business size data do not provide the necessary information to determine the set of circumstances triggering a specific direction of change in self-employment.

Conclusions
Different industries do react differently to cyclical changes. Some of the most cyclically sensitive industries, such as construction, are predominantly small businesses. Service industries, which produce a large proportion of small business GDP, tend to be less sensitive to the cycle than most other sectors.

Since downturns tend to increase job destruction more than it slows job creation, this could be one factor in the stability of service industries. Another factor is that services tied to health care are by their nature less sensitive to the ups and downs of economic activity.

Within the industry sectors, some industries show potential differences in how small businesses and large businesses are impacted by changes in the cycle, and some do not. In construction, small firms tend to be more negatively impacted by downturns than large firms, but do slightly better than large firms during expansion. Manufacturing/mining tends to show the opposite pattern from construction. Small businesses tend to do somewhat better in a downturn than large businesses; but, they do not grow as fast during an expansionary period.

References
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