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Abstract

In this article, three issues relating to leading composite indicators (LCI) are discussed: their importance, methods of estimation and uses by institutions worldwide. This discussion is utilised to provide lessons that could be learnt for the application of these indicators to the countries of the Caribbean. The principal message of this material is that in this geographical area, LCI would be important tools for economic decision makers to employ to forecast the future state of the economy. This option should be pursued vigorously by putting the necessary resources into developing the high frequency real sector data that is required for a successful application of the LCI methodology.

Keywords: Business cycles; Leading indicators

Introduction

Modelling and forecasting gross domestic product (GDP) is one exercise that various economic agencies must constantly grapple with in order to respond to the high expectations of the business world and financial, economic and political decision makers. At the national level, this reality is visible particularly in the industrialised countries, where the meticulous inspection of the short and very short-term movements of economic indicators plays an important role in the content of the information delivered to the general public. This type of activity has also gained importance at the supranational level, especially in Europe where research efforts conducted by several economists on behalf of the European Commission have led to the concept of a European business cycle.

In developing countries, however, the development and use of this type of economic analysis are far from forming part of the practice of decision makers. In the small open economies of the Caribbean this practice is almost non-existent. But this exercise should be imperative for these countries, especially in light of the recent happenings in Asia and Latin America; in the days following the economic and financial crises that affected Asia in 1997 and Argentina in 2001, the economic chaos and the risks of widespread bankruptcy illustrated well that economic fluctuations in developing countries, in particular the recession phases, can lead to explosive material and social difficulties. Therefore, there seems to be a pressing need to implement indicators that can help to model and forecast the changing pattern of economic activity. However, before approaching the empirical and technical aspects of developing leading composite indicators (LCI) a sensible step would be to review what has been done elsewhere. Accordingly, this paper examines the current literature on LCI with a view of ascertaining their applicability to the small islands in the Caribbean. The discussion is structured in four parts. First, the importance of the LCI for the Caribbean region is presented, followed by a brief review of the main strands of methods for calculating LCI and then, a presentation of the main leading indicators used in the world is made. Finally, the requirements for the employment of LCI to Caribbean economies are outlined.

The Importance of LCI for Caribbean Countries

There are several periods of economic and social history for each nation in the world, which is testimony of the extent of social catastrophes caused by economic crises and, consequently of the extreme importance of the devices of modelling and forecasting economic movements.

Theoretical and empirical contributions of this latter type of economic analysis has been accumulating since the beginning of the 1960s, and today, it enjoys the statute of being a complete discipline on its own and constitutes an essential know-how of the statistician-economist toolkit. Its objectives and its field of investigation are in triple dimension: diagnosis of the present economic situation; statistical study of economic fluctuations, and; the modelling and forecast of the economy at the sectoral or aggregate level.

One aspect of this economic analysis of short-term forecasting, and which has obtained the most success in the last few years is the development and use of LCI. The semantics of the name LCI makes the definition easy to understand: they are the result of the aggregation of various component series, each one giving a fine view of a particular area of the economy. Thus, from a practical point of view, LCI are defined as combinations of various economic indicators: sectoral macroeconomic production data, information relating to stocks and orders, people opinions about economic activity, monetary and financial statistics, employment figures, foreign trade data, etc. Naturally, the art of the combination employed lies in the choice of the components on the one hand and, the proportioning of their influence signalled by their weighted value on the other hand.

The sectoral movements of economic activity are not uniform since certain sectors are affected much more quickly by growth changes while for others the effects are delayed and have a lesser impact. To anticipate the evolution of the level of economic activity, it is therefore important to identify the variables that are precursory to the changes in GDP. For example, it is generally accepted that the industrial branches of the economy lead the cycle since they are often the suppliers of the other branches. In the same way, several indicators are pro-cyclic, for instance, permits for the construction of new buildings, the production of cement, etc.

Once the indicators have been selected and the estimates of the values of the LCI obtained by means of a suitable econometric technique, one is then in the operational phase of its use, that is, reflecting the economic evolution on the one hand and forecasting the turning points between the phases of expansion and slowdown in economic activity on the other.

How Can LCI be used in the Caribbean Countries?

Taking into consideration the elements already described, it is clear that LCI would be very useful for the private and public sectors of the Caribbean. The examples given below illustrate this.

Regulating Economic Activity

Firstly, LCI should contribute to the formulation of economic policies that allow the authorities to allocate financial resources and regulate economic activity optimally. Since Keynes, public economic action throughout the world has been based on the principle that macroeconomic policies have an impact on growth. Budgets and currencies appear in this case like the strong levers of management of global demand. As elsewhere in the world, the governments of the Caribbean need tools such as LCI to characterise current economic trends and allow them to arbitrate for the specifics of the implementation of macroeconomic regulation.

One area where LCI can be applied is in forecasting the level of growth that governments require in order to compute forecasts of revenues from taxes or any critical macroeconomic variables. Another possible application is at the sectoral level. In the Caribbean, there is obviously broad consensus surrounding the key role played by the tourism industry. For the great majority of Caribbean States, it occupies an important place in the quantum of exports of services. Given the recent exogenous shocks (natural disasters, acts of terrorism and war) on tourism and their potential direct and indirect repercussions on the national and local economies, LCI seem to be a useful and powerful tool for decision makers and the actors of the industry of tourism.

Usefulness to the Private Actors

Alongside the decision makers of Government, LCI are also important to the very varied private actors like central banks, research services in the commercial banks, financial markets, potential investors, etc. Below two examples are given to underline why these economic agents should devote some time to forecasting the economic situation in the economy.

Before engaging or investing in new equipment, companies need to know the general direction of demand for their products. In the Caribbean where domestic markets are relatively narrow and where certain companies are vulnerable to external markets, forecasting

the general direction of economic activity becomes essential. Likewise, before placing their savings or going into debt in order to acquire housing or to buy durable goods, households need to know whether prices and interest rates are or are not too high and if they will drop or increase.

Methods of Developing Indicators

Since the pioneering work of Burns and Mitchell (1946) at the National Bureau of Economic Research (NBER) in the United States of America, there has been an accumulation of various methods of constructing economic indicators. While it is relatively difficult to undertake an exhaustive review of these methods, it is easy to classify them into broad categories. Currently, the following main approaches can be distinguished: the traditional approach which is built to obtain a composite indicator starting from the combination of several series leading the business cycle; the recent qualitative approach which supplements the traditional approach by determining the probabilities of the occurrence of turning points; the econometric approach which builds models starting from a selection of variables advanced in order to quantify the cyclic evolutions and forecasts of GDP growth over the quarters to come.

The Traditional Approach

With this approach, the indicators are constructed based on the weighted average of a certain number of specific economic indicators. Mathematically

$$X = \sum_{k=1}^{n} w_k I_k$$

where X represents the desired indicator, I_k is the k^{th} selected coincident or leading series, and w_k is the weight associated with I_k. With this otherwise very simple approach, the difficulty essentially lies in the choice of the I_k components. This is done by considering the reference cycle of the economy and identifying those series that lead their respective cycles. This method is used worldwide by organisations engaged in business cycle analysis, of which the best known is the NBER. A modified version of this method is also employed by other institutions such as the Organisation of Economic Cooperation for Development(OECD).

One concrete example is Crédit Suisse's leading indicator, which is calculated as follows:

$$X_t = \sum_{k=1}^{4} w_k \left[\left(Y_{k,t-1} + Y_{k,t} + X_{k,t+1} \right) / 3 \right]$$

where *t* represents the quarter; *k* is four industrial groupings: chemicals, paper, clock-making, and hides and plastics; $Y_{k,t}$ represents the annual percentage change in output of industry *k*; $X_{k,t+1}$ is the annual percentage change in the exports of industry *k* relative to the first two months of the next quarter; w_k represents the weight of industry *k*, which is assigned according to its importance, which is in turn determined from value added tax data.

Econometric Models

This approach is the focus of several economists' work and has been used by the OECD (Charpin, 2002 ; Heyer and Péléreux, 2004) and the European Commission (Grassman and Keereman, 2001). The reasoning is the same as in the traditional approach: the leading indicator is deduced from a combination of series carefully selected because of their tendency to lead fluctuations in economic activity. However, the weights are obtained differently, that is, using econometric models. More precisely, the econometric equation explains the quarterly growth rate of GDP and the value of the indicator is deduced from the forecast for this growth rate. Monthly observations are utilised for the explanatory series, allowing the model to calculate the indicator each month from new economic information published.

In the case of France, the application by Heyer and Péléreux (2004) is based on the equation:

$$\ddot{Y}_t = \alpha_0 + \alpha_1 Ind_t + \alpha_2 Bat_{t-2} + \alpha_3 Serv_{t-2} + \alpha_4 PP_{t-4} + \alpha_5 TCR_{t-2} + \alpha_6 ETR_{t-3} + \varepsilon_t$$

where $\ddot{Y}_t$ is the growth rate of GDP; Ind_t, Bat_t and $Serv_t$ represent the economic survey data for industry, construction and services, respectively; PP_t, TCR_t and ETR_t are real oil prices in euros, the real rate of change in the dollar/euro exchange rate and the spread between short and long-term interest rates.

The Stock and Watson Method

The Stock and Watson (1989, 1991) method is a special case of the econometric approach and has become an important reference with regard to the construction of cyclic indicators. On the basis of the principle that the business cycle results from the combination of the movements of several macroeconomic variables, these authors proposed a model that is based on the decomposition of several series into a common component and an idiosyncratic component. By noting that Y_t is the vector of n initial series, in logarithms, ΔC_t their common unobservable component, representative of the current state of the economy and, u_t the vector of the idiosyncratic components, the specification of Stock and Watson is written as

$$\begin{cases} \Delta Y_t = \beta + \Theta(L)\Delta C_t + u_t \\ D(L)u_t = \varepsilon_t \\ \Psi(L)\Delta C_t = \delta + \eta_t \end{cases} \quad (1)$$

This specification has its mathematical underpinnings in the set of tools and concepts associated with state-space modelling, which assumes that models are structured around space equations (for example, the first equation in (1)) and equations pertaining to transition between states (for instance, the other two equations in (1)). Moreover, Stock and Watson (1989,1991) make a number of fairly strong assumptions: (i) there is no autocorrelation between the error terms ε_t and η_t; (ii) ΔC_t and the errors $u_{1t},...,u_{nt}$ are not autocorrelated or serially correlated among themselves; (iii) ΔC_t is the only component common to all the series and represents the only source of dynamism in the system, and; (iv) the series $Y_{it}, i = 1,...,n$ may be integrated but they are not cointegrated.

Since their approach is based on state-space models, Stock and Watson (1989, 1991) utilised the Kalman filter to estimate the unobserved variable C_t. It is calculated in two stages. First, a coincident indicator is obtained, using the estimated value of ΔC_t conditional on the information available at time t and denoted $\Delta C_{t|t}$, which represents a linear combination of the present and past values of the different components of the vector:

$$\Delta C_{t|t} = W(L)\Delta Y_t \quad (2)$$

where *W(L)* is the vector of weights. Then, Stock and Watson compute the synthetic leading indicator by estimating the future growth of the coincident indicator for the next 6 months (two quarters). The indicator is in fact simply the expected difference between the value of the coincident indicator in 6 months and its current value $\left(C_{t+6|t} - C_{t|t}\right)$. Thus, their estimator is not a prediction of the level of economic activity but rather a forecast of the growth in C_t over six months. The two are, however, closely linked, since the leading indicator is defined by $\left(C_{t+6|t} - C_{t|t}\right)$, the coincident indicator is given by $C_{t|t}$ and the sum of the two indicates the predicted level of future economic activity $C_{t+6|t}$.

The second stage is the estimation of the vector autoregressive model:

$$\begin{aligned} \Delta C_t &= \mu_c + \lambda_{cc}(L)\Delta C_{t-1} + \lambda_{cy}(L)Y_{t-1} + V_{ct} \\ Y_t &= \mu_y + \lambda_{yc}(L)\Delta C_{t-1} + \lambda_{yy}(L)Y_{t-1} + V_{yt} \end{aligned} \tag{3}$$

where Y_t is a vector of stationary leading indicators, V_{ct} and V_{yt} are non-serially correlated error terms, and $\lambda_{cc}(L), \lambda_{cy}(L), \lambda_{yc}(L)$ and $\lambda_{yy}(L)$ are lag polynomials whose orders are determined empirically using statistical criteria such as that of Akaike. Finally, having calculated the value of the coincident indicator C_t in the first stage, one can then determine the value of the leading indicator Y_t by solving the equations of the VAR model in (3) above.

The Main Leading Indicators Used in the World

The Variables

From one country to another, one finds significant differences with regard to the list of variables that are used to develop LCI. However, the number of series entering the index may be classified in four categories, as described by Charpin and Pérélaux (2000): variables which reflect the opinions of the managers of companies and other economic agents about the current business climate and of its upcoming evolutions (production, order books, financial situation, etc.); variables which indicate the activity in the real sphere of the economy (the index of the industrial production, administrative statistics like the registrations of vehicles, etc.); the monetary and financial variables which can predict the evolution of GDP (interest

rates, credit to private agents, etc.) and; variables of the external environment which are able to exert an influence on the economy (the exchange rate, foreign industrial production in order to capture the cycle of the dominant economy, price indices of imported materials, etc.).

There exists an important distinction between these variables in that the majority measure economic activity either physically or monetarily and therefore have frequent, periodic observations, whereas others are unobservable since they are mathematically defined based on linear combinations of observed variables. These unobservable variables are the synthetic variables that generally result from the analysis of principal components carried out based on surveys of economic agents.

The Institutions

A wide variety of official and unofficial organisations around the world publish economic analyses based on composite indicators. The official sources are generally associated with ministries of the economy and finance, while the unofficial sources encompass diverse organisations, from university and private research centres to international institutions.

Table 1 shows clearly the disparities among countries in the area of economic forecasting, with two points in particular being highlighted: (i) a small number of international institutions publish forecasts for a large proportion of countries, and; (ii) the number of methods utilised is limited, there are important differences among countries in respect of the number of variables employed in and range of coverage of the composite leading indicators.

In presenting this survey of the use of composite leading indicators in the literature, it is important to undertake the following analyses: examine the composition of LCI for a single institution, noting the differences and similarities between institutions by country, and comparing the composition of LCI in industrialised versus developing countries.

Coincident and Leading Indicators of the Conference Board

Founded in the United States in 1916, the Conference Board is the principal private organisation engaged in economic analysis and forecasting. The Conference Board has become a world leader in the marketing of economic expertise and forecasts, in the conduct of studies related to economic issues and in the provision of advisory services to decision makers

in government. It is within this context that the Conference Board produces and publishes indicators for nine countries.

Table 1 reveals that between 5 and 10 variables are used to construct these LCIs, or to be more precise, an average of 9 variables for industrialised countries and 5 for a developing country like Mexico. An examination of the composition of these LCI shows that the variables utilised for the United States, France, Germany and the United Kingdom are, for the most part, the same. On the other hand, for Asian countries such as Japan, Korea or even Australia, different variables are employed and these are fewer in number. Nevertheless, the two groups have some variables in common, such as share prices and new orders from industry.

The Leading Indicators of the OECD for its Member Countries

Since 1981, the OECD has published leading composite indicators. They were developed to indicate in advance the turning points in economic activity. In general, the index of industrial production (IPI) covering all industrial sectors is used as an approximation of GDP since the turning points of the IPI coincided with those of the economy as a whole for the majority of the OECD countries. The leading indicators include component series from a vast collection of key economic indicators (159 in total, 5 to 10 per country). The selected component series are those that were established as providing an indication on the future economic activity. The variables employed are: stocks of finished products (manufacturing), stock exchanges, the monetary aggregate M1 and new residences.

The Coincident and Leading Indicators of the NBER for the United States of America

These indicators consist of about a dozen variables, which cover various types of economic information. The series are expressed in monthly changes. For the coincident indicator, there are variables such as non-agricultural employment, income of households, industrial production, the sales of industry and commerce. For the leading indicator, variables include: (i) labour outcomes like the duration of the weekly work in industry, demand for unemployment benefits, orders with industry; (ii) the demand of the companies such as orders with the industry, delivery periods, new construction permits; (iii) outcomes in the financial sector like variation of the money supply, interest rates, prices of raw materials, and; (iv) the anticipation of the agents like the waiting time of the consumers for products.

In short, it is clear that at the international level, while institutions engaged in economic analysis may apply different methods to produce their LCI, the same variables are generally used from one institution to another. In effect, variables such as stock market movements, new construction permits and new industry orders are frequently chosen for their tendency to anticipate fluctuations in economic activity. Moreover, there are notable differences in the variables selected depending on the level of industrialisation (or development) of the country in question. Thus, Malaysia, Philippines, Mexico and Jordan, for example, have LCI composed of six variables on average, which are different from those used for industrialised countries.

Is the Caribbean Ready for LCI?

Unlike the United States of America and Europe there is a general lack of LCI for developing economies like those in the Caribbean. In fact, LCI for developing countries appeared for the very first time after 2000, following the financial crisis in South East Asia in 1997 and in South America at the turn of the 21st century, especially the Argentina crisis of 2001-2002. Authors like Burkart and Coudert (2002) and even more recently Marongiu (2005) have proposed the use of LCI to prevent the onset of financial crisis. In the same spirit, countries like Malaysia and the Philippines have agreed to put in place systems for the generation of LCI similar to those of the OECD countries (Zhang and Zhuang, 2002). To this day, among the 15 CARICOM member states, LCI exist only for Barbados (Cotrie, 2005 ; Cotrie, Craigwell and Maurin, 2006) and Trinidad and Tobago which has been constructed by the Caribbean Money Market Brokers, a private financial company (see Williams, 2006).

To some extent this almost total absence of LCI in the Caribbean basin reflects the requirement of the need for a significant amount of high frequency (monthly or quarterly) data to undertake this type of analysis. A perusal of the publications of the various statistical agencies in the Caribbean suggests that government, monetary, prices and foreign trade data are available at this high frequency for a significant period of time (about thirty years). In fact it is mainly this type of data that has been used by Jordan and Howard (2005) to predict economic recessions in the Caribbean.

It would appear that a major difficulty is with real sector data although certain production series (industrial production) are available at a high frequency. National Accounts information is only available on an annual basis and is reported usually with a significant lag.

Consequently, some Central Banks have used various interpolating methods to increase the frequency of this data (see Lewis,1997; Serju, 2004). Indeed, it is this generated data that Cotrie(2005) and Cotrie, Craigwell and Maurin (2006) employed to develop LCI for Barbados.

Also lacking is survey information relating to consumers and business persons expectation of the future path of the economy. Thus to undertake LCI analysis similar to those in the industrialised world resources (financial and human) would be needed to estimate national accounts and undertake consumer and business confidence surveys at high frequencies.

Besides data considerations, the clear neglect of developing LCI in the Caribbean may also reflect the following issues that are common to quantitative modelling in the Caribbean in general and aptly described in Maurin and Watson (2002): (i) scepticism of the policy makers vis-à-vis the validity of quantitative economic models ; (ii) ignorance about the potential of such models ; (iii) ignorance about the requirements for the best use of these models ; (iv) these models are too expensive to maintain, and ; (v) personnel on the ground do not have the required competence. Caribbean policymakers must outweigh this sceptism and caution with the dire need to forecast the future state of the economy because of the possible consequential explosive material and social difficulties, as well as to give suppport to government agencies negotiating with International Lending Agencies like the World Bank and the IMF.

Table 1: LCI in Various Countries in the World

Regions	*Organisations*	*Methods*	*No. of Variables*	*Variables Used*	*Sectors of the Economy*	*Length of Series*	*References*
North America							
United States	NBER	Method of weighted averages	11	– Length of weekly work in the industry – Demand for unemployment benefits – Orders to industry – Delivery times – New construction permits – Stock market – Variation in the money supply – Interest rates – Prices of raw materials – Consumer expectations	– The Labour market – Demand addressed to businesses – Financial sector – Anticipation des agents	Since 1948	http://www.nber.org/databases/macrohistory/contents/chapter16.html
	OCDE	Modified method of the NBER	4	– The stock of finished products (manufacturing) – Stock market – The monetary aggregate M1 – Accommodation in progress	– Financial sector – Anticipation des agents	Since 1955	http://www.oecd.org/dataoecd/46/25/1895867.pdf
	Conference Board	Method of weighted averages	10	– Average length of work of manufactures – Average weekly unemployment benefit – New orders in the manufacturing sector: consumer goods and materials – Performance of suppliers: Index of delivery times – New orders of manufactures: capital goods – New construction permits – Stock prices – Money supply M2 – Interest rates – Index of consumer expectations	– Labour market – Orders addressed to businesses – Anticipation des agents – Financial sector	Since 1959	http://www.conference-board.org/economics/bci/
Canada	Ministry of Finance of Canada	Stock et Watson Method	5	– Total employment – Real delivery of manufactured goods – Real retail sales – Total construction permits – Coincident indicator of the United States calculated by the Conference Board	– Consumer Sectors – Monetary and Financial Sectors – Foreign markets – Public Sector – Labour Market	1966:02 to 2001:06	Gaudreault, Carl, Robert Lamy and Yanjun Liu (2003)
	OCDE	Modified Method of the NBER	7	– Production, stocks and orders – Construction sales and trade – Labour force – Prices, costs and profits – Monetary and financial aggregates – Foreign trade – Business surveys	– Business Sector – Consumer Sector – Labour market – Monetary and Financial Sector	Since 1955	http://www.oecd.org/dataoecd/46/25/1895867.pdf

Europe							
France	Conference broad	Weighted Average Method	10	– The consumption of manufactured goods – The inverse bond yield – The inverse of the new demand for unemployment compensation and the stock index – Stock market fluctuations – New industry orders – Deviation in the rate of output – The deflationary ratio between value-added and the cost of labour in the Manufacturing Sector – Construction permits (residential) – The index of Consumer Confidence (balance of opinions)	– Business sectors – Monetary and Financial sector – Anticipation des agents	Since 1959	http://www.conference-board.org/economics/bci/
	OCDE	Modified Method of the NBER	7	– Production, stocks and orders – Construction sales and trade – Labour force – Prices, costs and profits – Monetary and financial aggregates – Foreign trade – Business surveys	– Sectors and business – Labour market – Monetary sector	Since 1955	http://www.oecd.org/dataoecd/46/25/1895867.pdf
	OFCE	These indicators mainly use the information contained in the economic surveys	5	– Business climate in Construction – Business Climate in Services – Real Price of Petrol in euros – Exchange rate dollar/euro – Spread between short-term and long-term rates	– Economic Surveys – Monetary and Financial Sector	1996-2005	http://www.ofce.sciences-po.fr/pdf/revue/10-88.pdf
Germany	Conference broad	Weighted Average Method	8	– New orders in the investment goods – Difference between the yields of 10 year and 3 month – Variation des stocks – Business products and the result of ownership – Stock prices – New order of residential demand – Rate of growth of the consumer and services price index – Index of Consumer Confidence	– Business Sector – Monetary and Financial Sector – Anticipation des agents	Since 1959	http://www.conference-board.org/economics/bci/
United Kingdom	Conference broad	Weighted Average Method	8	– Volume of the order books – Volume of planned production – Index of Confidence of households – Fixed interest price index – Share price index – New industry orders – Productivity of the wholesale economy – Operating surplus of commercial companies	– Business Sector – Monetary and Financial Sector – Anticipation des agents	Since 1959	http://www.conference-board.org/economics/bci/

Euro Zone	OFCE	These indicators mainly use the information contained within the economic surveys	8	– Quarterly GDP with a 1995 base year – The factor of the research industry – The factor of the retail trade survey – The factor of the construction survey – The registration of tourism vehicles – The real exchange rate euro/dollar – The difference between the real short-term interest rate in the Euro Zone and the rate of growth trend – The index of American Industrial Production	– Economic Surveys – Monetary and Financial Sector	1989-1999	http://www.ofce.sciences-po.fr/pdf/revue/10-88.pdf
Asie/Pacifique				–			
Australia	Conference broad	Weighted Average Method	8	– Medium term yield of Government bonds – Difference between the 10 year and 90 day yields – Stock market – Money supply M3 – Rural goods exports – Stock sales – Product of surplus operations – Approved Construction projects	– Business sector – Monetary and Financial Sector – Anticipation des agents	Since 1959	http://www.conference-board.org/economics/bci/
Korea	Conference broad	Weighted Average Method	6	– Share prices – Lettre de crédit arrivé – Index of delivery times for inventory – Exports – Government bond yields – Orders of private construction	– Business Sector – Monetary and Financial Sector – Anticipation des agents	Since 1959	http://www.conference-board.org/economics/bci/
Japan	Conference broad	Weighted Average Method	9	– Business Profits Profit d'exploitation – Housing in progress – Business Bankruptcies – Index of overtime work hours – Share prices – Rate of growth over 6 months of the production of work – Money supply – Bond yields – New construction projects	– Business Sector – Monetary and Financial Sector – Anticipation des agents	Since 1959	http://www.conference-board.org/economics/bci/
Malaysia	OCDE	Modified Method of the NBER	8	– Real Money Supply, M1 – KLSE Share Price Index, Industrial (1970 = 100) – Real, Total Traded: Eight Major Partners – CPI for Services, Growth Rate (Inverted) – Industrial Material Price Index, Growth Rate – Ratio of Price to Unit Labour Cost, Manufacturing – Housing Permits, Approved – New Companies, Registered	– Business Sector – Monetary and Financial Sector – Anticipation des agents	Since 1955	

Caribbean/South America							
Mexico	Conference broad	Weighted Average Method	5	– Industrial production – Stock prices – Cost of acquisition of US refiners for the importation of domestic petroleum products – Net insufficient inventory – Real exchange rate	– Business Sector – Monetary and Financial Sector – Anticipation des agents	Since 1959	http://www.conference-board.org/economics/bci/
Africa				–			
Jordan	Central Bank of Jordan	Modified Stock and Watson Method	5	– The net growth rate of funds in the private sector – The difference between the 3-month interest rate in Jordan and the American treasury Bill rate – The net rate of growth of the usable reserves of the Central Bank of Jordan – The growth rate of domestic exports – The rate of growth of the Amman Stock Exchange	– Business Sector – Monetary and Financial Sector – Anticipation des agents	1996-2002	Mongardini,Joannes and Tassin Saadi-Sedik (2003)

Conclusion

The development of leading indicators is a relatively old and established practice in the majority of the industrialised countries. From the 1950s, economic decision makers were confronted with the need to make a qualitative assessment of the real situation in the economy: is it at the edge of a recession or is it located on a path of sustained high growth? From a purely practical point of view, it is of crucial importance for decision makers to have the right answers to these types of questions since the direct and indirect repercussions of the variations of the growth in GDP could amount to several billions of dollars. Leading composite indicators are largely used in the industrialised countries to compute these answers by signalling in advance the dates and periods of changes in the business cycles. Even if it is impossible to utilise LCI to calculate with precision the influences of the many economic variables, they contribute nevertheless to the elaboration of the estimates of the future growth of the real economy.

In this article, three issues relating to leading composite indicators were discussed: their importance, methods of estimation and uses in the real world. Throughout this discussion, emphasis was placed on the lessons that could be learnt for the countries of the Caribbean. The principal message of this material is that in this geographical area, the LCI would be important tools for economic decision makers to use to forecast the future state of the economy as well as to lend credence to government institutions negotiating with International Lending Agencies like the World Bank and the IMF. This option should be pursued vigorously by putting the necessary resources into developing the high frequency real sector data that is required for a successful application of the LCI methodology. In the meanwhile efforts like Cotrie, Craigwell and Maurin (2006) who used generated high frequency real sector data with the Stock and Watson (1989,1991) approach, and Howard and Jordan (2005) who utilised the more traditional methods with the high frequency banking, government and trade data, should be encouraged.

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