ECONOMIC INTEGRATION IN NORTH AMERICA
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Abstract
Formal analysis of economic synchronization in North America is scarce. In this document we conduct an econometric exercise to determine the existence of common movements at short-run and long-run horizons among the gross domestic products of Canada, Mexico and the United States. Cointegration and common features tests suggest a significant degree of economic interdependence. In particular, for the sample period 1980-2006 we identify the existence of a common trend and two common cycles. Interestingly, we find that the North American economies have been highly synchronized since the 1980’s; a common trend and a common cycle are identified for the sub-sample period 1980-1993. We conclude that the signing of the North American Free Trade Agreement (NAFTA) was not the trigger that prompted economic integration, but primarily an event that contributed to strengthen a process that had already begun.
Key words: economic synchronization, cointegration, comovements.

1. Introduction

It is widely accepted that the economies of Mexico and the United States (US) are highly integrated. Anecdotal evidence and formal analysis suggest that economic fluctuations of the two countries follow a similar pattern. Torres and Vela (2002), for instance, find that trade across the manufacturing sectors of Mexico and the US intensified since 1994. Herrera (2004), on the other hand, implements the common cycles methodology suggested by Vahid and Engle (1993) and shows that the economies of the two countries are synchronized; not only do they share a common trend but also exhibit a similar response to transitory shocks. Chiquiar and Ramos-Francia (2005) and Mejia et al. (2006) draw a parallel conclusion based on the analysis of the dynamics of the manufacturing sectors of the two countries. Both documents indicate that the signing of the North American Free Trade Agreement (NAFTA) prompted the synchronization of the American and Mexican business cycles. A similar understanding is found for the case of Canada and the US. Studies dating back to the 1950s and 1960s, Rosenbluth (1957, 1958) and Hay (1966), have evaluated the joint behavior of these economies, and for the most part find close associations. Recently, Kose and Cardarelli (2004) examine the effect of trade agreements on the dynamics of business cycles and productivity. The authors confirm high correlation for the business cycles. Similarly, D’Ecclesia and Constantini (2006) estimate comovements and

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Acknowledgement: We thank Daniel Garcés, Jorge Herrera, Pablo Mejía and participants at the XV Mexican Colloquium of Mathematical Economics and Econometrics for helpful comments and conversations. The usual disclaimer applies. Financial support from the Universidad Autónoma de Baja California is acknowledged.
correlations between the stock markets of various developed economies, including Canada and the US. They show that financial markets are also integrated. Interestingly, there are virtually no studies about the Canada-Mexico economic relationship. Not surprisingly, formal analysis of the three NAFTA economies is scarce. Only recently do we find research studies on the subject. Cuevas et al. (2003), Rosmy and Simons (2007), and Fernandez and Kutan (2005) are perhaps the most representative. The first document analyzes the correlations between the growth rates of various economic indicators of Canada, Mexico and the US; and concludes that economic interdependence increased as a result of the trade agreement. Similarly, Rosmy and Simons show that the economies exhibit a similar response to common shocks. In their words, they identify a North American business cycle. In contrast, Fernandez and Kutan recognize a high degree of economic interdependence, but suggest that the business cycles are asynchronous. A point of coincidence between the last two documents, nonetheless, is suggesting that the signing of NAFTA was not the trigger of the economic integration of Canada, Mexico and the US; their economies were already highly synchronized before 1994.

Hence, in general the conclusion of the previous studies indicates some level of integration within the North American economies, especially after 1994. However, a consensus on the matter is far from being reached. In this document we contribute to the discussion by evaluating the existence of common movements between the gross domestic products (GDPs) of Canada, Mexico and the US. We employ novel techniques that can accurately measure common dynamics among time series, both in the long-run and in the short-run. In particular, we implement the econometric methodology suggested by Johansen (1991) to identify common features in long horizons; and the methodology proposed by Vahid and Engle (1993) to determine the existence of common cycles. As such, not only do we learn about the joint behavior of the trends, but we also identify the joint response of the economies to transitory shocks.

This paper is closest in spirit to Rosmy and Simons (2007). However, ours is different in a fundamental way: while they identify a common cycle for North America, they find no evidence of a common trend; in contrast, we find both. That is, we show that the NAFTA economies not only share business cycles, but also a trend.

Clearly, identifying common movements of the NAFTA economies is an interesting exercise in many respects. Standard economic theory suggests that surges in trade flows among countries may lead to the synchronization of their business cycles. Hence, this exercise can be thought of as a test of this theory. Alternatively, one may consider the present analysis as a preliminary evaluation of the likelihood that NAFTA may evolve into a more profound trade arrangement, such as a customs union or a monetary union. As it is amply known, a precondition for considering any of these scenarios would be that the North American economies exhibit some degree of homogeneity. Of course, factors beyond economics must also be examined, and to that extent we do not pretend to provide an exhaustive evaluation of these possibilities, but rather present evidence that may contribute to increase our understanding of the economic dynamics in the region.

Moreover, we go a step further by showing that the economic integration of Canada, Mexico and the US was not a process that emerged as a result of the free trade agreement,

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1 Other studies of the Canada-US relation include Bonomo and Tanner (1972), Phillips (1991) and Gregory et al. (1997).
but one that had already started. In particular, we conduct the econometric exercise for a sample that covers the period prior to 1994, and find that the GDP’s of the North American economies were highly synchronized. On this front we concur with Rosmy and Simons (2007) and Fernandez and Kutan (2005), and dissent with Chiquiar and Ramos-Francia (2005), who suggest that the signing of NAFTA led to the synchronization of the business cycles of Mexico and the US.

The document is structured as follows: Section II presents the data and a graphical illustration of the variables. In Section III we conduct the estimation exercises and discuss the results. Section IV concludes.

2. Data

We obtained GDP data for Canada from Statistics Canada, for Mexico the source was the National Institute of Economics, Statistics, and Informatics (INEGI), and for the US the Bureau of Economic Analysis. All values are in constant terms. The original series for Canada and the US were reported seasonally adjusted. In the case of Mexico, we adjusted the series with the Census X12 methodology. The period of analysis is from the first quarter of 1980 to the fourth quarter of 2006. As a preview to the econometric exercise, we present a graphical illustration of the series. Graph 1 shows the normalized variables in logarithms and Graph 2 their annual growth rates.

The close association between the three economies is apparent in both graphs; with the exception of the period between the late 1980’s and early 1990’s, the growth rates of the NAFTA economies seem to follow a common direction. Notice, for example, that between 1982 and 1983 the three countries experienced a severe contraction, followed by an impressive recovery in 1984. Also, the Mexican peso crisis of 1994 appeared to have affected the entire region, with a more accentuated fall in production for the case of

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2 We choose to normalize the variables to have a more accurate illustration of their joint behavior. Alternatively, we could have adjusted the scale on both axis, but given the different units of measurement for the three variables, the graph would not have been as descriptive as the one we present.
Mexico, of course. After a brief period of sustained growth, from 1995 to 2000, production slowed-down again in 2001; as a consequence of the economic conditions in the US. These observations are consistent with the findings of Rosmy and Simons, who identify similar turning points for recession periods in the three economies. Naturally, since the graphical analysis simply provides a visual representation of the dynamics of the time series, in the following section we implement the econometric exercise to formally test the existence of common movements.

Section III. Econometric Exercise

3. Methodology and results.

3.1. Methodology. The econometric strategy consists on testing for common trends and common cycles. Since the methodology employed to conduct the cointegration analysis, Johansen (1991), is amply known we spare the reader from a detailed description. We briefly summarize, nonetheless, the Vahid and Engle (1993) methodology: consider the Wold representation of the stationary first difference of a $n \times 1$ vector $y_t$.

$$\Delta y_t = C(L)e_t = C(1)e_t + (1 - L)C^*(L)e_t$$

Integrating (1) we obtain

$$y_t = C(1)\sum_{i=0}^{\infty} e_{t-i} + C^*(L)e_t$$

which is the common trend representation derived in Stock and Watson (1988) and in fact a multivariate version of the Beveridge-Nelson trend-cycle decomposition. In (2) the first term represents the trend component and the second the stationary cyclical component. The existence of cointegration implies that $\alpha' C(1) = 0$ and $\alpha$ is a $n \times r$ matrix of $r$ cointegrating coefficients. Similarly, the existence of common serial correlation features implies that $\alpha' C^*(L) = 0$ and $\alpha$ is a $n \times s$ matrix of $s$ common features. The cointegrating relationships can be estimated employing various methodologies. As it was previously mentioned, however, we use that suggested in Johansen (1991) since this methodology allows us to compute the number of cointegrating relations $(r)$.

Following Engle and Vahid (1993), the number of common features $(s)$ is estimated by first computing the squared canonical correlations $(\lambda_j^2)$ in the system and then testing the null hypothesis $\lambda_j^2 = 0, \forall j = 1, 2, ..., s$. Under the null, the relevant test statistic is

$$C(p, s) = -(T - p - 1)\sum_{i=1}^{s} \log(1 - \lambda_i^2)$$

and has a $\chi^2$ distribution with $s^2 + snp + sr - sn$ degrees of freedom. The number of lags to be included in the system, $p$, corresponds to one less than the number of lags in the autoregressive system in levels. Once the number of cointegrating $(r)$ and common features $(s)$ relationships have been estimated, a decomposition of the system in the spirit of Beveridge and Nelson (1981) can be implemented; as long as the condition $r + s = n$ holds. Specifically, as shown in Issler and Vahid (2001) and applied in Herrera (2004), a trend-cycle decomposition can be performed when the sum of the number of cointegration vectors and the number of
common features vectors is equal to the number of variables. Specifically, from expression (2) we can stack the cointegrating and cofeature vectors as follows:

\[
\begin{bmatrix}
\tilde{\alpha}' y_t \\
\alpha' y_t
\end{bmatrix} = \begin{bmatrix}
\tilde{\alpha}' T_t \\
\alpha' C_t
\end{bmatrix}
\]

(3)

Let \( A = \begin{bmatrix} \tilde{\alpha}' \\ \alpha' \end{bmatrix} \), since this matrix has full rank, it can be inverted. If the columns of the inverse are partitioned, the common trend(s) and common cycle(s) can be recovered by pre-multiplying the cointegrating and cofeature vectors by \( A^{-1} \). Specifically,

\[
y_t = A^{-1} y_t = \tilde{\alpha}^{-1} (\tilde{\alpha}' y_t) + \alpha^{-1} (\alpha' y_t)
\]

(4)

where the first term on the right side represents the trend component and the second term the cyclical component. In the exercise that follows we implement this test for common cycles and the corresponding time series decomposition.  

3.2 Estimation and Results for the 1980-2006 Period. The empirical implementation is conducted following the methodologies previously mentioned. First, since the exercise requires the estimation of cointegrating relations, we verify the order of integration for each of the variables analyzed. Next, we calculate the number of lags to be included in the system by referring to standard information criteria for lag exclusion in a vector autoregression (VAR) in levels. Then, we implement the Johansen methodology to evaluate the existence and magnitude of cointegrating relations. Finally, we conduct the Vahid and Engle common cycles test.

We estimate the Kwiatkowski-Phillips-Schmidt-Shin (KPSS) unit root test and report the results in Table 1; these indicate that the GDP series are all integrated of order 1, I(1). The results are consistent with what has been found in previous studies.

<table>
<thead>
<tr>
<th>Series</th>
<th>Level</th>
<th>First Diff.</th>
<th>Critical Val.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Canada</td>
<td>0.182</td>
<td>0.142</td>
<td>0.146</td>
</tr>
<tr>
<td>US</td>
<td>0.390</td>
<td>0.058</td>
<td>0.146</td>
</tr>
<tr>
<td>Mexico</td>
<td>0.180</td>
<td>0.037</td>
<td>0.146</td>
</tr>
</tbody>
</table>

For purposes of estimating the cointegrating relations, we order the VAR with the US series first, then Canada and finally Mexico. This is simply to normalize the cointegrating vector with respect to the largest economy in the region. According to standard criteria for lag exclusion in a VAR, we find that the optimal number of lags in levels is 2; hence, we use 1 lag for the cointegration test. With this restriction, we conduct the Johansen test and report the results in Table 2. Both criterion, trace statistics and maximum eigenvalue, suggest the existence of one cointegrating relationship. The normalized vector is also presented in Table 2.

3 See Issler and Vahid (2001) for a complete technical derivation.
4 For Canada and the US this exercise has been performed exhaustively in the literature. For the case of Mexico see for example Castillo and Diaz-Bautista (2002). We considered a specification that included a constant and a trend.
Table 2. Cointegration Results

<table>
<thead>
<tr>
<th>Hypothesized r</th>
<th>Trace Statistic</th>
<th>Critical Value 5%</th>
<th>Max Eigenvalue</th>
<th>Critical Value 5%</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>37.62</td>
<td>29.80</td>
<td>26.59</td>
<td>21.13</td>
</tr>
<tr>
<td>At most 1</td>
<td>11.03</td>
<td>15.49</td>
<td>10.07</td>
<td>14.26</td>
</tr>
<tr>
<td>At most 2</td>
<td>0.96</td>
<td>3.84</td>
<td>0.96</td>
<td>3.84</td>
</tr>
</tbody>
</table>

Cointegrating Vector: (1, -0.55, -0.13)

The sign and magnitude of the normalized coefficient are consistent with what we may expect. In particular, there is a positive association between the US product and the Canadian and Mexican GDPs. The coefficient with respect to Canada is a little larger relative to that of Mexico. This may be interpreted as indicating a closer association of the US economy with the Canadian economy relative to the association with Mexico.

Imposing the restriction of one cointegrating vector and 1 lag in levels, we now implement the Vahid and Engle common-cycles methodology and report the results in Table 3.

Table 3. Cofeature Results

<table>
<thead>
<tr>
<th>Null Hypothesis</th>
<th>Squared Correlations</th>
<th>Cofeature Statistic</th>
<th>DF</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>s &gt; 0</td>
<td>0.023</td>
<td>2.22</td>
<td>2</td>
<td>0.33</td>
</tr>
<tr>
<td>s &gt; 1</td>
<td>0.062</td>
<td>11.98</td>
<td>6</td>
<td>0.06</td>
</tr>
<tr>
<td>s &gt; 2</td>
<td>0.394</td>
<td>59.54</td>
<td>12</td>
<td>0.00</td>
</tr>
</tbody>
</table>

Cofeature Vectors

(1, 0, -0.42)
(0, 1, -0.52)

According to the test statistics, there are two common features vectors in the system, both are reported in the table. Notice that when normalized with respect to the first variable (US GDP) or with the second (Canadian GDP) the corresponding coefficient is negative, implying a positive association with the Mexican GDP. The result with respect to the US is not surprising, since the high association between the two economies is widely documented. It is interesting, however, to find the relation between Mexico and Canada, since little is known about the interrelation of the two economies.

Since \( r + s = n \), we can implement a trend-cycle decomposition in the spirit of Beveridge and Nelson (1981). The matrices for the trend and cycle components are reported in Table 4. We computed the common trend with respect to the US product and generated the series denoted Common Trend. In Graph 3 we show an illustration of the common trend individually for each country to avoid overcrowding. Again, we present the normalized series to have a more descriptive illustration of their joint behavior.

Table 4. Trend and Cyclical Components

We thank Jorge Herrera at Banco de Mexico for generously providing the GA USS code to carry out the test.

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\[5\] We thank Jorge Herrera at Banco de Mexico for generously providing the GA USS code to carry out the test.
Matrix for the Trend Component

<table>
<thead>
<tr>
<th></th>
<th>US GDP</th>
<th>CAN GDP</th>
<th>MEX GDP</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.79</td>
<td>0.03</td>
<td>0.15</td>
<td></td>
</tr>
<tr>
<td>0.06</td>
<td>0.99</td>
<td>-0.05</td>
<td></td>
</tr>
<tr>
<td>1.06</td>
<td>-0.15</td>
<td>0.22</td>
<td></td>
</tr>
</tbody>
</table>

Matrix for the Cyclical Component

<table>
<thead>
<tr>
<th></th>
<th>US GDP</th>
<th>CAN GDP</th>
<th>MEX GDP</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.21</td>
<td>-0.03</td>
<td>-0.15</td>
<td></td>
</tr>
<tr>
<td>-0.06</td>
<td>0.01</td>
<td>0.05</td>
<td></td>
</tr>
<tr>
<td>-1.06</td>
<td>0.15</td>
<td>0.78</td>
<td></td>
</tr>
</tbody>
</table>

Graph 3. Country Trend and North American Common Trend
Comparing the GDP of the US with the common trend we notice the slow-downs of the early 1980’s, early 1990’s and 2001. Also, the expansion of the late 1980’s and 1990’s is evident. For the case of Canada we observe a similar pattern. It is interesting to note that in both cases the economies appear to be below potential GDP in recent years. For the case of Mexico we also recognize the crisis of the 1980’s, although is not quite clear in the illustration. The deep economic recession of the 1980’s (the lost decade) and the 1994 slow-down associated with the currency crisis are evident.

Graph 4 illustrates the cycles around the common trend for the three countries, denoted Common Cycle VE. These are the cycles we obtained from subtracting the Common Trend from the original series in each case. For comparison purposes, we also show a cycle obtained from a more conventional decomposition technique, Hodrik-Prescott, (HP).

Graph 4. Business Cycle around the North American Common Trend
Notice that in general both cycles follow a qualitatively similar pattern. For the case of the US, the cycles recognize the three recessions we previously indicated; in the early 1980’s and 1990’s and 2001. Also, both portray the economic expansion of the 1990’s. In the case of Canada we find a similar association, with the exception of the late 1990’s, when the HP captures a very large jump in economic activity and a subsequent fall in late 2001. In contrast, the cycle we obtained shows the general slow-down that initiated in the mid 1990’s but not the peak at the end of the decade. Whether this difference translates into profound implications for analysis depends on how much emphasis we place on the various econometric techniques employed, and whether we “trust” one more than the other. In our minds, as long as the general movement of the cycle is qualitatively similar, we choose not to overemphasize minor differences.\textsuperscript{6} In the case of Mexico we notice no qualitative differences in the behavior of the cycles. Both show an improvement in economic activity right before the 1982 economic crisis, surely associated with the oil boom in the country. The persistent slow-down of the 1980’s and subsequent expansion of the 1990’s until the 1994 crisis is also captured. The recovery of the late 1990’s and the 2001 recession are also evident.

Overall, we find that the common trend we identified for the North American economies, and the corresponding cycles, suggest economic episodes consistent with what we have experiences in the continent.

3.3. Estimation and Results Pre-NAFTA. We now proceed to test the synchronization of economic activity prior to the signing of NAFTA. We follow the procedure previously implemented with a shorter sample, from 1980 to 1993. The results of the unit root tests are presented in Table 5. As expected, the series are integrated of order 1.

\begin{table}[h]
\centering
\begin{tabular}{l|c|c|c}
\hline
Series & Level & First Diff. & Critical Val. \\
\hline
Canada & 4.665 & 0.065 & 0.146 \\
US & 0.319 & 0.111 & 0.146 \\
Mexico & 0.382 & 0.122 & 0.146 \\
\hline
\end{tabular}
\caption{Unit Root Tests}
\end{table}

Table 6 reports the cointegration tests results. According to the trace and the maximum eigenvalue statistics, there exists one cointegration relationship between the variables. Notice that the cointegration coefficients are similar to those found for the entire sample. That is, we do not identify a significant change in the trajectory of the trends before NAFTA, when compared with the overall sample period.

\textsuperscript{6} It is well known that different trend-cycle decomposition methods will yield different trends and cycles. Our purpose in this document is not to compare which one of the two is more precise or reliable. We prefer to recognize the general econometric results as the basis for elaborating on a meaningful discussion about an economic phenomenon of interest, in this case the synchronization of the North American Economies.
Table 6. Cointegration Results

<table>
<thead>
<tr>
<th>Hypothesized r</th>
<th>Trace Statistic</th>
<th>Critical Value 5%</th>
<th>Max Eigenvalue</th>
<th>Critical Value 5%</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>33.54</td>
<td>29.80</td>
<td>29.84</td>
<td>21.13</td>
</tr>
<tr>
<td>At most 1</td>
<td>3.70</td>
<td>15.49</td>
<td>3.46</td>
<td>14.26</td>
</tr>
<tr>
<td>At most 2</td>
<td>0.24</td>
<td>3.84</td>
<td>0.24</td>
<td>3.84</td>
</tr>
</tbody>
</table>

Cointegrating Vector: (1, -0.50, -0.15)

Next we estimate the Vahid and Engle methodology for common cycles and report the results in Table 7. In this case, the test statistics indicate the existence of only one cofeature vector; the same is reported in the Table.

Table 7. Cofeature Results

<table>
<thead>
<tr>
<th>Null Hypothesis</th>
<th>Squared Correlations</th>
<th>Cofeature Statistic</th>
<th>DF</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>s &gt; 0</td>
<td>0.01</td>
<td>0.62</td>
<td>2</td>
<td>0.73</td>
</tr>
<tr>
<td>s &gt; 1</td>
<td>0.21</td>
<td>13.96</td>
<td>6</td>
<td>0.03</td>
</tr>
<tr>
<td>s &gt; 2</td>
<td>0.67</td>
<td>76.16</td>
<td>12</td>
<td>0.00</td>
</tr>
</tbody>
</table>

Cofeature Vector (1, -0.19, -0.05)

Here, we find that when normalized with respect to the product of the US, the coefficient for Canada is larger than that corresponding to Mexico. This may suggest the closer association that the two developed economies exhibited prior to NAFTA, compared to their economic relationship with Mexico. The result follows that reported in Rosmy and Simons (2007), who point to a closer interrelation between Canada and the US than with these two economies with respect to Mexico. The finding should not be surprising, since traditionally trade links between these two countries have been much stronger than any association of them with Mexico. Recall that prior to 1988 the Mexican economy was hardly opened. Moreover, Canada and the US implemented a bilateral trade agreement well before NAFTA was signed.

What we do find somewhat puzzling, however, is the overall results of the existence of a common trend and a common cycle. How is it possible that two developed economies exhibit economic dynamics similar to those of a developing economy?; especially before becoming one free-trade area. A plausible explanation is the fact that even before 1994 the Mexican economy relied extensively on exports to the US. In fact, the dependence of Mexico on the US market dates back to the 1800’s. As illustrated in Graph 2, for the most part the Mexican cycle follows the US cycle: as the US expanded, Mexican exports responded and the Mexican economy was “pulled” in the direction of the US economy. One may argue that this was not really the case, since we find two turning points in the behavior of the GDPs that are different across the three countries: 1987-1988 and 1991-1992. There are, however, clear explanations as to why this was the case and that do not contradict the dependence of Mexico on the US economy. In the first case, the poor performance of the Mexican economy was due to the debt crisis, a condition that had no
significant effect on the other two economies. In the second case, we notice that Mexico expanded robustly while Canada and the US slowed-down. Here we need to recognize the boom in the credit market experienced in Mexico. As financial markets opened and external funds were available, Mexican consumers increased their consumption at unprecedented rates; the country experienced impressive growth rates fueled by aggregate consumption. Naturally, once the agreement was signed, the subsequent increase in trade flows surely contributed to homologizing the business cycles. Moreover, debt crises and credit expansions have not occurred in Mexico after 1994. Overall, once we account for the unusual previously mentioned episodes, we find that the economic performance of the North American economies has been similar since the 1980’s, suggesting that NAFTA did not prompt the synchronization of their business cycles, but only contributed to it.

IV. Conclusions

The economic interdependence between Canada, Mexico and the United States has traditionally received little attention. In general, cross country studies center on two economies and hardly ever has the trio been analyzed. For the most part, we find a consensus in so far as to the high degree of synchronization of the American and Mexican business cycles; especially after the signing of NAFTA. Similar understanding exists with respect to the American and Canadian economies. However, studies of the NAFTA economies are scarce. In this document we pretend to add to the debate by evaluating the existence of common trends and common cycles in the gross domestic products of the three countries. In contrast to the few studies found in the literature, we identify common movements in the short-run and in the long-run, not only for the entire period of more than 20 years, but also for a shorter period that considers the years prior to NAFTA.

Surely, analyzing the joint behavior of the three countries is interesting in and of itself, but the implications of the results we obtain here reach beyond the econometric exercise. For example, having identified that the economies share a common trend and common cycles, one may suggest a possible evolution of NAFTA into a more profound economic association, a customs union or even a monetary union. As it is well known, a precondition for the adoption of a common currency is the synchronization of the business cycles among the economies of interest. Hence, one can now make the argument that on economic grounds this step of economic integration is feasible. Of course, many other factors, not considered here, would have to be included in a broad discussion of such agreements, political and cultural to mention two. Also, it is clear that a more detailed study of the economic integration is warranted. For instance, it would be nice to evaluate the synchronization of disaggregated economic sectors, including those of the manufacturing sector. Studies of that nature escape the scope of the present analysis and are postponed to future research.

References


