

Contents lists available at [ScienceDirect](https://www.sciencedirect.com)

North American Journal of Economics and Finance

journal homepage: www.elsevier.com/locate/najef

International synchronization of the Mexican states business cycles: Explaining factors

Pablo Mejía-Reyes^{a,*}, Liliana Rendón-Rojas^a, Reyna Vergara-González^a,
Patricio Aroca^b

^a Centro de Investigación en Ciencias Económicas, Facultad de Economía, Universidad Autónoma del Estado de México, Cerro de Coatepec s/n, Ciudad Universitaria, Toluca, Mexico

^b CEPR, Business School, Universidad Adolfo Ibáñez, Av. Padre Alberto Hurtado 750, Of. 207-C, Viña del Mar, Chile

ARTICLE INFO

JEL classifications:

E31
E32
F41

Keywords:

Growth cycles
International synchronization
Sub-national business cycles
Mexican states

ABSTRACT

The aim of this paper is to identify the explaining factors of the synchronization of the business cycles of the Mexican states and those of the US economy. The cycle indicator is obtained by detrending the series of total formal employment (Mexican states) and nonfarm employment and industrial production (US). In general, our panel data model estimations suggest the existence of spatial autocorrelation and significant time-period fixed effects. Also, the estimates indicate a significant and positive effect of the ratio of foreign direct investment to gross domestic product (GDP), which may be supplementing the impact of international trade (driven by the most internationally integrated states) and a negative effect of the ratio of remittances to GDP (driven by less integrated states). Finally, the evidence suggests that more similar productive structures yield more synchronized business cycles.

1. Introduction

The last three decades have witnessed a growing integration of the economies of the world in a process characterized not only by boosting flows of international trade and capital but also by a greater integration of the productive processes of firms located worldwide (throughout vertical integration and/or offshoring). The increasing synchronization of business cycles of the economies on different continents has been a major consequence of these tendencies, as several papers have documented (Artis, Krolzig, & Toro, 2004; Mejía, 2004; Aiolfi et al., 2006; Osborn et al., 2005; Baxter & Kouparitsas, 2005).

Although most papers on the topic of business cycle synchronization have studied national business cycles, a branch of the literature has focused on the analysis of the international synchronization of regional business cycles (Barrios & de Lucio, 2003; Clark & van Wincoop, 2001; Volpe & Molinari, 2007). Specific regions can exhibit differentiated cycles depending on how they absorb international shocks, which, in turn, is a function of factors such as their productive structure, degree of exposure to external shocks, local economic policies or financial conditions, infrastructure and weather.¹

In the case of Mexico, several papers have documented a high degree of synchronization of its business cycles with those of the United States (US), especially after its economy became more open and less regulated, a process that culminated when the North

* Corresponding author.

E-mail addresses: pmejia@uaemex.mx (P. Mejía-Reyes), lrendonr@uaemex.mx (L. Rendón-Rojas), rvergarag@uaemex.mx (R. Vergara-González), patricio.aroca@uai.cl (P. Aroca).

¹ See, for example, Norrbin and Schlagenhaut (1988), Altonji and Ham (1990), and Clark (1998) for analyses of the effects of these factors.

<https://doi.org/10.1016/j.najef.2018.01.009>

Received 10 August 2017; Received in revised form 17 January 2018; Accepted 25 January 2018
1062-9408/ © 2018 Published by Elsevier Inc.

American Free Trade Agreement came into force in 1994.² Notwithstanding, not too many studies have explored the nature of the international synchronization of regional fluctuations and it seems that none has formally identified its causes. In particular, by applying different methodologies associated to the growth cycle approach of [Kydland and Prescott \(1990\)](#), [Cuevas, Messmacher, and Werner \(2003\)](#) find that the cyclical fluctuations of the Southern states are largely independent, those of the Central states are more responsive to fiscal and other idiosyncratic perturbations and only the fluctuations experienced by the Northern states are significantly synchronized to the dynamics of the US economy. In turn, [Mejía and Campos \(2011\)](#) find that the Mexican states having highly synchronized business cycles with those of the US are located in the Northern and central regions. Moreover, [Mejía and Silva \(2014\)](#) compute the synchronization degree over 5-year rolling windows and conclude that it has been heterogeneous not only across states but also over time. Finally, [Mejía and Campos \(2011\)](#) suggest that their results may be explained by the relative importance of international trade, foreign direct investment and the ‘maquila’ production as well as by the nature of the productive structure.

In summary, these studies agree that the international synchronization of the business cycles of the Mexican states or regions have been heterogeneous and changing over time. Furthermore, they conjecture that these differences may be explained by factors measuring their degree of integration to the international flows of goods and capital. However, none of them has formally tested the importance of these factors, at least for the recent period. Hence, the aim of this paper is to determine whether the synchronization of the Mexican states business cycles with those of the US can be explained by variables related to the relevance of international transactions (trade, foreign direct investment and remittances), specialization of the productive structure and geographical location.

On the basis of the conventional methodology introduced by [Kydland and Prescott \(1990\)](#), the synchronization is measured as the degree of co-movement between the corresponding business cycle indicators over the period 1999–2013, a period conditioned by data availability that corresponds to the fully integration of Mexico to the international economy, since by then the North American Free Trade Agreement had come into force (1994) and China had gained access to the World Trade Organization (2001).³ The cycle indicators are obtained by de-trending formal employment series (Mexican states) and nonfarm employment and industrial production series (US) by using the filter proposed by [Hodrick and Prescott \(1997\)](#).

The rest of this paper is organized as follows. Section 2 presents the main causes of business cycle synchronization, while Section 3 describes the methodology to be used and the data set. In Section 4 we discuss the main results and, finally, we state some conclusions.

2. What explains international synchronization of business cycles?

Three main causes of international synchronization of business cycles have been proposed in the literature ([Canova & Dellas, 1993](#)). First, common shocks, such as oil crises, global recessions or revivals, political conflicts and similar economic policies, may affect different geographical units in a similar manner provoking their cyclical fluctuations to move in the same direction. Second, when the productive structure of different countries or regions is similar sectorial specific shocks may provoke their business cycles to move in phase because most of their productive activity responds to the same driving forces, and vice versa. Third, business cycles may be synchronized due to the transmission of country specific shocks through international transactions, which can be especially relevant when a small open economy is highly integrated to a larger one.

Regarding the last case, some authors have argued that international trade is the most important mechanism in the synchronization of the cycles of different countries or regions, especially when it assumes the form of intra-industry trade (see [Canova & Dellas, 1993](#); [Anderson et al., 1999](#); [Baxter & Kouparitsas, 2005](#); [Otto, Voss, & Willard, 2003](#); [Osborn et al., 2005](#)). Furthermore, trade liberalization may enhance its effects ([Frankel & Rose, 1998](#)). In addition, foreign direct investment (FDI) has contributed to the internationalization of production, which has caused it to become an important transmission channel of shocks hitting the source and the host economies, especially in the era of globalization (see [Hanson & Slaughter, 2003](#); [Jansen & Stokman, 2011](#)). Furthermore, some authors have highlighted the importance of multinational firms in the recently observed increase in international trade flows resulting from vertical integration of their productive processes.⁴

Other transactions may also contribute to international synchronization through their effects on local economic activity, such as remittances. According to the “smoothing hypothesis”, they may be counter-cyclical in the worker’s country of origin (the recipient), but pro-cyclical in the migrant’s host country (the sender). Therefore, they may act as a stabilizing factor in the recipient country ([Sayan & Feltenstein, 2006](#); [Frankel, 2009](#)). However, when the business cycles of both the sender and the recipient countries move together remittances are pro-cyclical as well, which may cause them to become destabilizing forces that amplify the magnitude of cyclical fluctuations.⁵

Furthermore, the geographical location of states can also help to explain the international synchronization of their business cycles. Specifically, it is expected states located closer to the main market destination to have economies more dependent of international

² See, for example, [Agénor, McDermott, and Prasad \(2000\)](#) and [Alper \(2002\)](#).

³ Moreover, several papers have argued that the synchronization of the Mexican economy to the US business cycle is really evident from the second half of the nineties (see [Castillo, Díaz, & Fragoso, 2004](#), and [Mejía, Gutiérrez, & Fariás, 2006](#)).

⁴ Essentially, there are two approaches to analyze the relationship between FDI and international trade. The source country may invest in the destination country to substitute trade, which usually is motivated by the desire to be close to customer markets due to high transportation costs; then firms run similar operations at different locations. In contrast, FDI may increase trade transactions between the source and the host country when multinational firms split up the production process in different countries on the basis of their comparative advantages (see [Fontagné, 1999](#), and references therein).

⁵ Another factor that may have analogous effects is tourism ([Gouveia, Guerreiro, & Rodriguez, 2013](#)), but the estimates presented below suggests that they are not statistically significant.

متن کامل مقاله

دریافت فوری ←

ISIArticles

مرجع مقالات تخصصی ایران

- ✓ امکان دانلود نسخه تمام متن مقالات انگلیسی
- ✓ امکان دانلود نسخه ترجمه شده مقالات
- ✓ پذیرش سفارش ترجمه تخصصی
- ✓ امکان جستجو در آرشیو جامعی از صدها موضوع و هزاران مقاله
- ✓ امکان دانلود رایگان ۲ صفحه اول هر مقاله
- ✓ امکان پرداخت اینترنتی با کلیه کارت های عضو شتاب
- ✓ دانلود فوری مقاله پس از پرداخت آنلاین
- ✓ پشتیبانی کامل خرید با بهره مندی از سیستم هوشمند رهگیری سفارشات