Analyzing the Impact of Trade Liberalization in Morocco through Synthetic Control Analysis and the Role of Preferential Policies

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Abstract: This study explores the impact of trade liberalization in Morocco post the 1983 structural adjustment program, utilizing the Synthetic Control method for a comprehensive comparative analysis. Initial findings show a negative impact until 2010, indicating a divergence from the Synthetic Control simulation. However, a positive shift occurs post-2000 due to preferential liberalization policies, leading to sustained economic growth from 2010 onwards. The study underscores the importance of additional liberalization initiatives and structural reforms. While acknowledging contributions, limitations include potential biases in the Synthetic Control method. The research highlights temporal nuances in economic reform impacts, advocating for a long-term perspective in assessing trade liberalization. Beyond Morocco, the study offers insights for policymakers in developing economies, emphasizing the need for selective reform implementation. Overall, it contributes to the understanding of global economic dynamics, prompting further exploration of growth strategies and the intricate interplay between economic reforms, trade liberalization, and sustainable development in developing nations.

Key words: Structural Adjustment Program-Trade Liberalization- Synthetic Control Method-Preferential Liberalization

تحليل تأثير تحرير التجارة في المغرب من خلال تحليل السيطرة الاصطناعية

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الكلمات الرئيسية: برنامج التكيف الهيكلي - التحرير التجاري - الاصطناعية للتحكم - التحرير التفضيلي.
1. Introduction

Since 1982, developing countries have grappled with a long-standing debt crisis sparked by a surge in borrowing during the 1970s. The true extent of this debt challenge became apparent in 1985, forcing nations to find a delicate balance between repaying debts and addressing development needs (Tomann H., 1988). As these countries began paying more to the IMF and private banks than they received, they faced tricky challenges related to trade liberalization. Despite seeing more money from trade, it didn't always lead to better financial health. Measures like cutting spending, designed to fix imbalances in what they owed and what they earned, often slowed down growth, revealing a tug of war between development goals and the practical realities of the global economy (World Bank Report on World Development, 1988).

Liberalization, imposed on these countries as "structural adjustment aid" by the IMF and the World Bank, significantly shaped their economic policies. To achieve a balance in international trade, they made changes to their budgets, privatized government-owned businesses, revamped foreign trade, and freed up prices for agricultural products. In their pursuit of lasting growth, these countries opted for special trade agreements. However, whether these deals with richer or poorer nations really work is still up for debate. Our research stands out for its unique approach, specifically looking into what happens when a country like Morocco adopts the trade reforms imposed by the "structural adjustment program.

This study aims not just to be different but to uncover the practical impacts of trade changes on Morocco's economy. Beyond theories, our goal is to offer a fresh perspective on how countries can grow economically in our complicated global landscape. As talks continue about trade changes and their implications, our research seeks to explain why Morocco chose special trade reforms. The findings from our study promise to provide a better understanding of how countries can grow economically in this complex global world.

This thesis is divided into two parts: the first part explores the basic ideas of growth and trade changes, then delves into the methodology and model specification (Sections 2, 3, and 4). The second part investigates the consequences of these changes, examines research findings and conclusions, and explains why we used the Synthetic Control method to understand the complex economic dynamics at play (Sections 5, 6 & 7).

2. The literature review

Let's delve into the world of trade liberalization through our literature review. We'll uncover the key concepts of this economic strategy, shedding light on the unknown. As we explore past theories, we'll untangle the intricate links between liberalization and growth. Our innovative approach will involve using Synthetic Control in economic analysis, providing an original perspective on these dynamics. However, we should be mindful of the nuances, limitations, and considerations that will shape our understanding. Get ready to dive into the complex interplay between trade liberalization and economic growth in Morocco.

2.1. Conceptual Framework of Trade Liberalization

Trade liberalization is a significant change in how developing countries run their economies, especially through programs like those from the IMF and the World Bank. In this section, we delve into the important aspects of trade liberalization, examining what it means, what it aims to achieve, and the theoretical debates about it.
2.1. Goals of Trade Liberalization:

Trade liberalization is commonly seen as a strategy to boost economic growth by fostering a more open business environment. The main objectives include:

• Promoting international trade: By reducing tariff and non-tariff barriers, liberalization aims to encourage the exchange of goods and services between countries, fostering increased integration into the global economy (Bhagwati, 2008; Irwin, 2009; Krugman & Obstfeld, 2009)...

• Attracting foreign investment: An open and liberalized economy is often viewed as more appealing to foreign investors, promoting investment flows and technology (Porter, 1990; Dornbusch, Fischer & Startz, 2014; World Bank, 2021)...

• Enhancing economic efficiency: By exposing domestic companies to international competition, liberalization seeks to increase efficiency, productivity, and competitiveness (Krueger, 1997; Rodrik, 2007; Krugman & Obstfeld, 2009; WTO, 2019)...

2.1.2. Implications of Trade Liberalization

• Economic restructuring: Liberalization can lead to structural changes, such as the privatization of state-owned enterprises and the reconfiguration of economic sectors to better align with market forces (Krueger, 1990; Rodrik, 1999; World Bank, 2005; Stiglitz, 2006)...

• Social challenges: While liberalization may stimulate economic growth, it can also result in social inequalities, disruptions in the labor market, and negative impacts on traditional sectors (Birdsall, Rodrik & Sabot, 1995; Rodrik, 1997; Sen, 2002; Stiglitz, 2002)...

2.1.3. Theoretical Debates

• Comparative advantages: The theory of comparative advantages by Adam Smith (‘The Wealth of Nations’, 1776) and David Ricardo (‘Principles of Political Economy and Taxation’, 1817) argues that liberalization promotes a more efficient allocation of resources globally.

• Dependency critiques: Some researchers, influenced by dependency theory, challenge the notion that liberalization fosters development, emphasizing its risks of reinforcing economic dependence (Prebisch, 1950; Dos Santos, 1970; Cardoso & Faletto, 1979)...

• Institutional approaches: Approaches like economic institutionalism focus on the role of institutions in the success or failure of liberalization. In the context of Morocco, a thorough analysis of these conceptual dimensions of trade liberalization will provide a robust foundation for evaluating its specific impact on economic growth, as explored in our research (Meyer & Rowan, 1977; North, 1990; Hall & Taylor, 1996)...

2.2. Theories and Previous Research on the Impact of Liberalization on Growth

Exploring the impact of trade liberalization on economic growth has generated an extensive theoretical and empirical body of work spanning several decades. Existing literature provides a diversity of approaches and perspectives, enhancing our understanding of the nuances in this complex relationship.

2.2.1. Classical Theories

• Comparative Advantages: Rooted in classical theories dating back to Adam Smith and David Ricardo, these theories propose that liberalization, by encouraging specialization and international
trade based on comparative advantages, stimulates economic growth. They argue that opening to global markets allows for a more efficient allocation of resources.

- **Life Cycle Theory:** This approach suggests that economies, as they develop, go through different stages, from industrialization to specialization in higher value-added sectors. Liberalization is seen as a driver of this process, leading to increased growth (Hirschman, 1958; Rostow, 1960; Todaro & Smith, 2014)...

### 2.2.2. Critical Theories

- **Dependency Theory:** A critical perspective questions the universal benefits of liberalization by highlighting its risks of reinforcing the economic dependence of developing countries on industrialized nations. This theory sheds light on the inherent structural inequalities in global economic relations (Prebisch, 1950; Cardoso & Faletto, 1979; Frank, 1966)...

- **Deterioration of the Terms of Trade Theory:** Some researchers emphasize that liberalization may expose developing countries to unfavorable fluctuations in commodity prices, leading to a deterioration of their terms of trade (Prebisch, 1950; Singer, 1950; Emmanuel, 1972)...

### 2.2.3. Empirical Research

- **National Experiences:** National case studies have examined the effects of liberalization on economic growth. Countries like India (Bhagwati & Desai, 1970; Rodrik & Subramanian, 2005), China (Brandt & Rawski, 2008), and various nations in Latin America (Stallings, 1987; Edwards, 1995) have been at the center of research aimed at understanding the concrete outcomes of liberalization policies.

- **Assessments of Trade Agreements:** Research has delved into specific trade agreements, evaluating their impact on the economic growth of participating countries. This includes the analysis of North-South (Bhagwati & Panagariya, 1996; Bhagwati, J., & Panagariya, 1996) and South-South agreements (Fazio et al, 2013).

### 2.2.4. Current Debates

- **Role of Institutions:** Current debates underscore the importance of institutions in the success of liberalization (Acemoglu & Robinson, 2012). National institutional contexts can shape how reforms are implemented and influence their impact on growth (North, 1990; Acemoglu & Robinson, 2012).

- **Social Considerations:** Contemporary research considers the social implications of liberalization, examining how it affects inequalities, employment, and living conditions (Wood, 1994; Rodrik, 1997; Stiglitz, 2002; Standing, 2011; Milanovic, 2016).

### 2.3. Use of Synthetic Control in Economic Studies

The use of Synthetic Control in economic studies represents a sophisticated methodological approach aimed at assessing the impact of economic reforms, such as trade liberalization, on a given economy. This method provides significant advantages in empirical economic research, especially when precise counterfactual data is unavailable (Abadie, Diamond & Hainmueller, 2010).
2.3.1. Core Principles of Synthetic Control

- Creation of a Comparable Control Group: Synthetic Control involves constructing a synthetic control group that has not undergone the studied reform but is comparable to the treated unit (in this case, Morocco after liberalization). This allows simulating a realistic counterfactual situation to assess what would have happened in the absence of the reform.

- Selection of Control Variables: Relevant control variables are identified to ensure comparability between the treated group and the synthetic control group, which may include economic, demographic, or other factors likely to influence outcomes.

2.3.2. Benefits of Synthetic Control

- Overcomes Selection Issues: When establishing an appropriate control group without the reform is challenging, Synthetic Control helps overcome selection problems by creating a group like the treated unit.

- Causal Estimation: By simulating a counterfactual control group, Synthetic Control enables researchers to estimate the causal effects of the reform more reliably, contributing to more robust conclusions.

2.3.3. Application in the Context of Trade Liberalization in Morocco

- Simulating a Realistic Counterfactual: Since Morocco has undertaken trade liberalization reforms, Synthetic Control can simulate a counterfactual Morocco that would not have undergone these reforms. This provides valuable insight into potential outcomes without liberalization.

- Analyzing Impacts on Growth: Synthetic Control can be applied to assess how economic growth in Morocco might have differed in the absence of trade liberalization, allowing for a deeper understanding of the actual effects of the reform.

2.4. Limitations and Considerations (Abadie, Diamond & Hainmueller, 2010).

- Key Assumptions: The effectiveness of Synthetic Control relies on underlying assumptions and the quality of the data used, requiring precautions to minimize potential biases.

- Sensitivity to Control Variables: Thoughtful selection of control variables is crucial, as inappropriate choices can introduce biases into the results. By incorporating Synthetic Control into our methodology, our study aims to provide a robust assessment of the impact of trade liberalization in Morocco, overcoming challenges associated with the absence of direct counterfactual data. This approach enhances the credibility of our findings and contributes to the quality of economic research in the context of structural reforms.

3. Theoretical Framework

The theoretical framework of our study is built on robust foundations from economic literature, blending theories of international trade with prior research on the effects of trade liberalization on economic growth. This conceptual framework provides a structure for our analysis and allows us to formulate hypotheses guided by established theoretical principles.

3.1. Definitions and Key Concepts

In the scope of our study on the impact of trade liberalization on economic growth in Morocco, several key terms require precise definitions:
• Trade Liberalization: This concept refers to the removal of restrictions and trade barriers, promoting international exchanges of goods and services (Winters, 2004).

• Economic Growth: We adopt the conventional definition, measured by the sustained increase in the gross domestic product (GDP) of a nation over a given period (Mankiw, Romer & Weil, 1992).

• Synthetic Control: In the context of our study, synthetic control is a statistical methodology aimed at estimating the causal effect of trade liberalization on growth, using a synthetic control group that resembles the treated group (Abadie, Diamond & Hainmueller, 2010).

3.2. Theoretical Models Underlying the Study

Ricardo's Comparative Advantage Model: This model suggests that countries benefit from specializing in production where they have a comparative advantage, promoting efficiency in trade.

Endogenous Growth Theory: We incorporate elements of this theory, emphasizing the importance of internal factors like innovation and capital accumulation in driving growth.

3.3. Research Hypotheses

Building upon the established theoretical framework, our hypotheses will guide the analysis of the impact of trade liberalization in Morocco:

• Main Hypothesis: Trade liberalization has a positive impact on economic growth in Morocco, promoting a more efficient allocation of resources and stimulating international trade.

• Methodological Hypothesis: The use of Synthetic Control will enable the estimation of causal effects of trade liberalization, minimizing selection biases and enhancing the internal validity of our analysis.

By articulating these definitions, theoretical models, and hypotheses, our theoretical framework informs our methodological approach and guides our empirical analysis of the impact of trade liberalization on economic growth in Morocco.

4. Methodology

Our objective is to assess how the trade liberalization reform has influenced Morocco's economic growth from 1965 to 2019, employing the synthetic control method. The synthetic control group comprises Egypt, Jordan, Tunisia, Bulgaria, and Malta.

We will delve into the detailed data description, thoughtful variable choices, the application of the Synthetic Control method, and the justification for this approach. While acknowledging inherent challenges, this methodology aims to offer a clear and informed understanding of the dynamics underlying the complex interaction between trade liberalization and economic growth in Morocco.

4.1 Choice of Variables and Indicators


4.2. Synthetic Control Methodology

Our methodology relies on the Synthetic Control Method, a robust statistical approach enabling the creation of a synthetic control group closely resembling the treated group (Morocco post-
liberalization). This aims to isolate the specific causal effect of trade liberalization on economic growth.

The methodology relies on creating a synthetic counterfactual for a treated unit by aligning the pre-treatment trend of the outcome variable. The underlying assumption is that the treated unit would have evolved similarly to a synthetically adjusted counterpart in the absence of treatment. The counterfactual is a weighted average of untreated control units from a suitable donor pool, minimizing the mean squared error to best match the pre-treatment outcome of the treated unit.

The Synthetic Control Method (SCM) minimizes the mean squared error pre-treatment between the observed outcome and the counterfactual, using derived weights to optimize the match. Counterfactual weights are chosen to minimize the mean squared prediction error, overcoming the limitations of control group selection. This approach provides a robust perspective for assessing the impact of trade liberalization.

The SCM method can be viewed as a specific type of linear regression, employing a linear combination of weights determined by the data to minimize biases. This ensures enhanced transparency and robustness compared to arbitrary approaches.

4.3. Why We Chose the Synthetic Control Method?

The Synthetic Control method offers several advantages, notably considering structural differences and constructing a control group that faithfully reflects the characteristics of the treated group. Due to its non-parametric nature, the SCM method is less prone to misspecification issues, allowing for a more accurate modeling of the annual impact of the reform. Moreover, it is less susceptible to endogeneity biases stemming from time-varying unobservable confounding factors. This represents an improvement over difference-in-differences and time-fixed effects approaches, which only account for time-invariant confounding factors (Billmeier et al., 2013).

4.4. Methodological Limitations

While powerful, the Synthetic Control Method is not immune to limitations, such as sensitivity to underlying assumptions and variations in the selection of control variables (Abadie, Diamond & Hainmueller, 2010). Despite these considerations, we believe this method provides a robust approach to assess the impact of trade liberalization in Morocco. By combining methodological rigor with careful variable selection, our methodology aims to offer a thorough and nuanced analysis of the effect of trade liberalization on economic growth, acknowledging the inherent methodological challenges in such studies.

5. Simulations outcomes

In this section, we use the SCM to assess how the trade liberalization reform of the 'PAS' has influenced economic growth in Morocco. Our approach involves creating a synthetic Morocco by cleverly combining other developing countries carefully chosen to mirror Morocco's economic growth indicators before the implementation of the trade reform. The objective is to model the hypothetical trajectory of GDP per capita that Morocco would have followed in the absence of the 1983 reform. Thus, we evaluate the impact of the reform by comparing the actual trends (with the reform) and counterfactual trends (without the reform) of GDP per capita in Morocco.
In critically assessing our results in light of previous studies, we conclude that the impact of the commercial reform on Morocco's per capita GDP was limited during the first two years following its implementation. In the initial period (pre-1983), the per capita GDP trajectory in the synthetic Morocco was lower than that of the real Morocco, supporting the notion of sustained initial demand, as suggested by Meinhardt et al. (1995). However, from 1983 onward, a significant divergence between the two trajectories emerged. While per capita GDP growth slowed in synthetic Morocco, from 2010 onward, real Morocco continued to increase at a rate comparable to the pre-reform period. This finding raises pertinent questions about temporal impacts and underscores the need for a thorough evaluation of the results in the context of prior research to better understand the post-reform dynamics.

Moreover, the observed positive benefits of the commercial reform from 2010 onward could also be attributed to the impact of preferential trade liberalization implemented by Morocco since the late 90s.

Our assessment of the impact of the trade reform on Morocco's GDP per capita is indicated by the difference between the actual situation in Morocco and its synthetic counterpart, as visualized in the figure below.
The gap between the two series continues to widen until 2010. Our findings suggest a pronounced initial negative impact of the trade liberalization reform on Moroccan incomes. It wasn't until 2010 that the reform began to have a positive effect on economic growth. Therefore, it took 27 years for the trade reform to show positive effects on economic growth. Over the entire period from 1983 to 2019, we observe an increase of approximately 2.5% in per capita GDP compared to the 1983 baseline.

6. Discussion

The observation that the commercial reform took several years to yield lasting economic effects in Morocco prompted the country to adopt a preferential liberalization approach. This transition materialized through the implementation of a preferential commercial liberalization policy, characterized by specific agreements with partners from the North and the South. The primary goal of this initiative is to stimulate trade and selectively strengthen Morocco's economic relations. By favoring selective liberalization, Morocco aims to maximize economic benefits while mitigating challenges associated with broader reforms (Baldwin, 2003; Berg and Krueger, 2003; Bolaky & Freund, 2004; Chang et al., 2005; Panagariya, 2004; and Winters, 2004). This policy direction reflects Morocco's intention to shape its economic strategy considering contextual realities, capitalizing on opportunities presented by preferential liberalization.

The findings from our synthetic control analysis reveal an intriguing trajectory of the impact of commercial reform in Morocco. The persistence of the divergence between the two series until 2010 underscores a significant initial negative impact of the reform on income. However, with the introduction of preferential liberalization in 2000, economic growth seems to have taken a positive turn from 2010. This dynamic raise crucial questions about the respective influence of the commercial reform initiated in 1983 and the preferential liberalization launched in 2010 on economic growth. Determining which of these two initiatives had the most significant and lasting impact on the Moroccan economy is essential. This duality in commercial policies highlights the complexity of economic reforms and underscores the need for in-depth analyses to better understand the underlying mechanisms of these changes. Decision-makers will need to carefully examine these results to effectively guide Morocco's future economic policies and maximize the benefits of liberalization initiatives.
7. Summary and conclusion

In conclusion, our study on the impact of trade liberalization in Morocco sheds light on the country's economic evolution since the implementation of the structural adjustment program in 1983. Using a rare comparative approach, we analyzed the results through the lens of SCM, providing a rigorous assessment of the reform effects. The findings suggest that the initial impact of trade liberalization was negative, with a persistent gap between Morocco's real economic trajectory and the one simulated by SCM until 2010.

However, the subsequent implementation of preferential liberalization policies from 2000 onwards seems to have reversed this trend, leading to positive economic growth from 2010. This duality in results emphasizes the importance of considering other liberalization initiatives and structural reforms in analyzing economic dynamics. Moroccan policymakers should take these results into account to effectively guide future economic policies, maximizing the benefits of reforms while mitigating potential challenges.

Despite these significant contributions, it is crucial to acknowledge the inherent limitations in our methodology and conceptual framework. The comparative nature of our approach, though informative, may pose challenges in generalizing results to other contexts. Additionally, specific choices related to SCM and other aspects of our methodology introduce some subjectivity.

Furthermore, our study adds to academic literature by highlighting the temporal nuances of economic reform impacts. The results underscore the need for a long-term perspective in evaluating trade liberalization policies. Lessons drawn from the Moroccan experience may also be relevant to other developing economies, emphasizing the importance of selectivity in implementing reforms to maximize benefits while minimizing risks.

In summary, our study provides an original contribution to understanding complex economic dynamics in a globalized context. It prompts thoughtful consideration of economic growth strategies and encourages ongoing research to better grasp the interactions between economic reforms, trade liberalization, and sustainable development in developing countries.

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