

Well-being and the Regionalization of Trade Exchanges in Algeria.

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Abstract:

This research quantifies the economic impacts of a preferential agreement with the European Union on Algerian households, employing a static computable general equilibrium framework based on a 2012 Social Accounting Matrix. The simulation of a unilateral removal of tariff barriers on European products reveals counter-intuitive results: contrary to classical free trade predictions, household surplus contracts, as evidenced by the negative equivalent variation metric. This erosion of welfare is primarily explained by massive trade diversion favoring European flows, generating a compression of available resources, savings capacity, and real purchasing power. The analysis demonstrates that discriminatory regionalism generates net costs in the Algerian context, imperatively requiring compensatory policies – targeted investments and redistributive mechanisms – to mitigate transitional adjustments and foster sustainable and equitable improvement in collective welfare.

Keywords: Regionalism, CGE, Trade Diversion, Equivalent Variation, welfare.

Jel Classification Codes : F13, C68, D58

ملخص

يحدد هذا البحث كمياً الآثار الاقتصادية لاتفاق تفضيلي مع الاتحاد الأوروبي على الأسر الجزائرية، باستخدام إطار توازن عام محسوب ثابت يعتمد على مصفوفة المحاسبة الاجتماعية لعام 2012. يكشف محاكاة الإلغاء الأحادي للحواجز الجمركية على المنتجات الأوروبية عن نتائج معاكسة للتوقعات الكلاسيكية للتجارة الحرة، ينكمش فائض الأسر، كما يتضح من مقياس التغير المكافئ السلبي. ويُفسر هذا التآكل في الرفاهية أساساً بتحويل تجاري هائل لصالح التدفقات الأوروبية، مما يولد ضغطاً على الموارد المتاحة وتراجع كل من القدرة الادخارية والقوة الشرائية الحقيقية. يُظهر التحليل أن الإقليمية التمييزية تولد تكاليف صافية في السياق الجزائري، مما يستلزم بالضرورة سياسات تعويضية -تتضمن استثمارات موجهة وآليات إعادة توزيع - من أجل تخفيف آثار التحولات الانتقالية وتعزيز تحسين مستدام ومنصف في الرفاه الجماعي

الكلمات المفتاحية: الإقليمية، التوازن العام المحسوب، تحويل التجارة، التغير المعادل، الرفاهية.

رموز تصنيف JEL: F13, C68, D58

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I. Introduction

The international stage is characterized by multiple commercial tensions, along with the complexity of dispute cases between nations submitted to the World Trade Organization; these disagreements in mercantilist thought are fueled by the strategic interests of countries aiming to export their unemployment and support an export-driven growth model; however, well-being is inseparable from economic objectives, for the protection of employment, maintained growth in production, and price stability collectively contribute to satisfying social strata. Similarly to its neighbors, Algeria was among the last to endorse an association agreement aimed at establishing a free trade zone with the European Union, and it also counts itself among the final countries not yet to have benefited from WTO member status. It is important to note that Algeria has initiated negotiations and undertaken numerous reforms to this end, so much so that customs tariffs have been significantly reduced both in number and in rate, and the openness rate of the Algerian economy is now lower than that of France, or even Tunisia and Morocco.

Nevertheless, Algerian trade policy is experiencing perturbations, since the free trade zone initially planned for 2017 was postponed to the 2020 horizon; furthermore, within the span of a single year, the Algerian state proceeded to modify the customs duties applied to certain imported products; these hesitations are primarily explained by the financial situation the country experienced following the drastic fall in oil prices in 2014, which led to the recourse to restrictive measures intended to reduce the import bill that has ceaselessly grown since the progressive tariff dismantlement undertaken since 2006. Indeed, a payments balance deficit authorizes countries, even WTO members, to temporarily employ safeguard measures.

To avoid once again resorting to international debt, Algeria found it prudent to review and renegotiate its trade policy after the wake-up call that shook the productive system from its lethargy, a lethargy due principally to its nature as a rentier economy. In this work, we are concerned with trade policy, namely tariff dismantlement and its impact, which we will study through a quantitative analysis to quantify the effect of this transition on household well-being.

Through a Computable General Equilibrium (CGE) model, the most appropriate tool for analyzing the repercussions of trade reforms (Annabi, Cissé, Cockburn, & Decaluwe, 2005; Dissou, 2002), we propose to quantitatively evaluate Algeria's commercial orientation in its quest for development through integration into the global economy. Theory teaches us that consumer surplus increases with the lowering of customs tariffs, as the consumer gains access to imported products at lower costs, which in turn exert a price-adjusting effect on local prices through competition; these are the results of the partial equilibrium

analysis on the consumer, which also stipulates that they will have a wider choice of products through the diversification of imports.

The few existing studies on regionalism in Algeria fail to quantify the impact on consumers regarding wage income or welfare, which sets our paper apart. Existing research focuses on growth rates and macroeconomic aggregates in general, without examining the equivalent variation that we compute in this study to assess the magnitude of changes in consumer surplus.

I.1 Study problem:

Our analysis will be conducted within the framework of general equilibrium to study the impact of interactions between economic factors and their collective effect. Therefore, the problematic aspects of our study emerge from the following central question: Will the consumer truly find himself in a better position if a free trade zone is achieved and customs duties that lead to inflation in the prices of foreign goods are abolished?

II. Dimensions of well-being

The measurement of well-being remains a complex exercise for economists, as a conceptual controversy regarding the choice of its dimensions—"Utility" versus "Capabilities"—is compounded by discussions concerning the empirical apprehension of household living standards; thus, an identification of household or individual well-being based on access to assets holds more profoundly pragmatic than conceptual foundations (J.P. Lachaud, 2006).

According to the 2011 report from the European Commission, nine factors contribute to the determination of well-being, enumerated as follows:

II.1 The Factors of Well-being

Subjective well-being, which depends on mood influenced by luck, destiny, genetic makeup, and personality;

Economic and professional situation;

Education and intellectual development;

Health and nutrition;

Infrastructure;

Personal relationships;

Civic life;

Cultural and spiritual activities;

Environment.

As economists, we insist on the economic and professional situation, which is interpreted through the importance of money in an individual's life, for this situation is closely linked to employment and income level. Considered the most

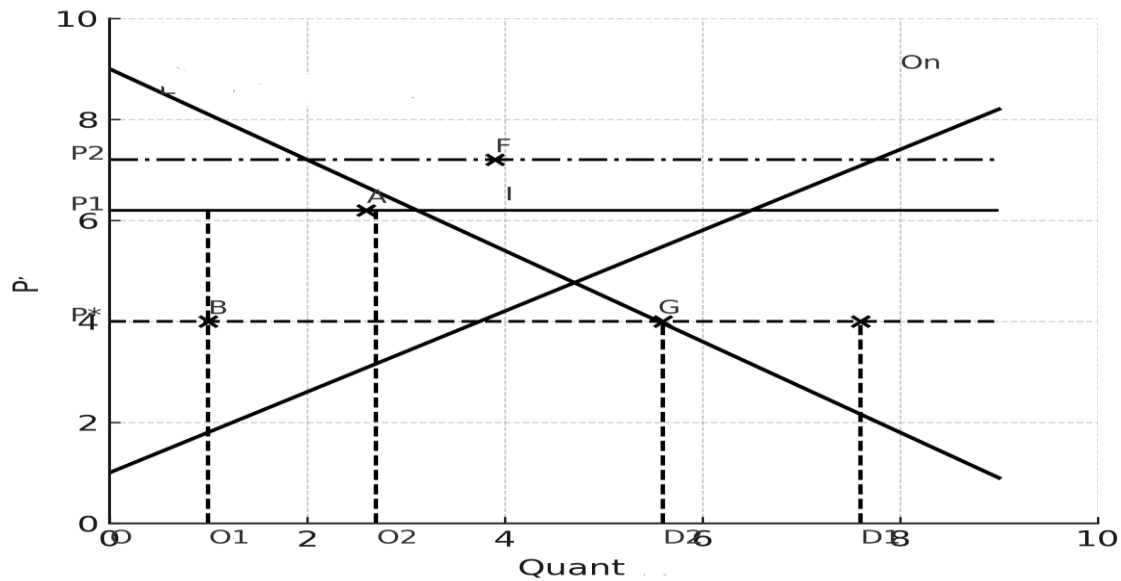
important means of accessing well-being, it allows for the provision of basic needs such as housing, food, and clothing; furthermore, income is indispensable not only for elementary expenditures but also for secondary ones, such as traveling, participating in cultural activities, leisure, and sharing; that being said, to measure well-being, one must measure the employment rate in an economy and, consequently, examine household expenditures.

II.2 Commercial Policy and Well-being

"The establishment of a customs duty on imports lowers the level of satisfaction for the community of consumers compared to free trade," as fundamentally stated by (Bernard Guillochon, 1998), a proposition which inherently suggests that free trade or the abolition of such tariffs should reverse the consumer's situation; however, this theoretical premise enters into a complex debate concerning the critical distinction between preferential trade liberalization—which is inherently discriminatory—and the broader, non-discriminatory principle of multilateralism, a nuanced argument advanced by (J.M. Siroen, 2019), thereby highlighting the contextual limitations of unilateral trade models.

To better apprehend the intricate relationship between commercial policy—operationalized here through the level of customs tariffs established by a small country—and societal welfare, we initially utilize a microeconomic partial equilibrium analysis to demonstrate the consumer's immediate situation in relation to the decrease or abolition of customs duties; this framework allows us to theoretically analyze the evolution of their surplus within a constrained, single-market context, illustrating the classic gains from trade through the increase in consumer surplus as market prices fall and consumption expands, yet this simplified approach deliberately abstracts from the economy-wide repercussions and intersectoral feedback effects that ultimately determine the net welfare outcome.

Figure No. 1: Effect of Trade Liberalization in a Partial Equilibrium (Small Country)



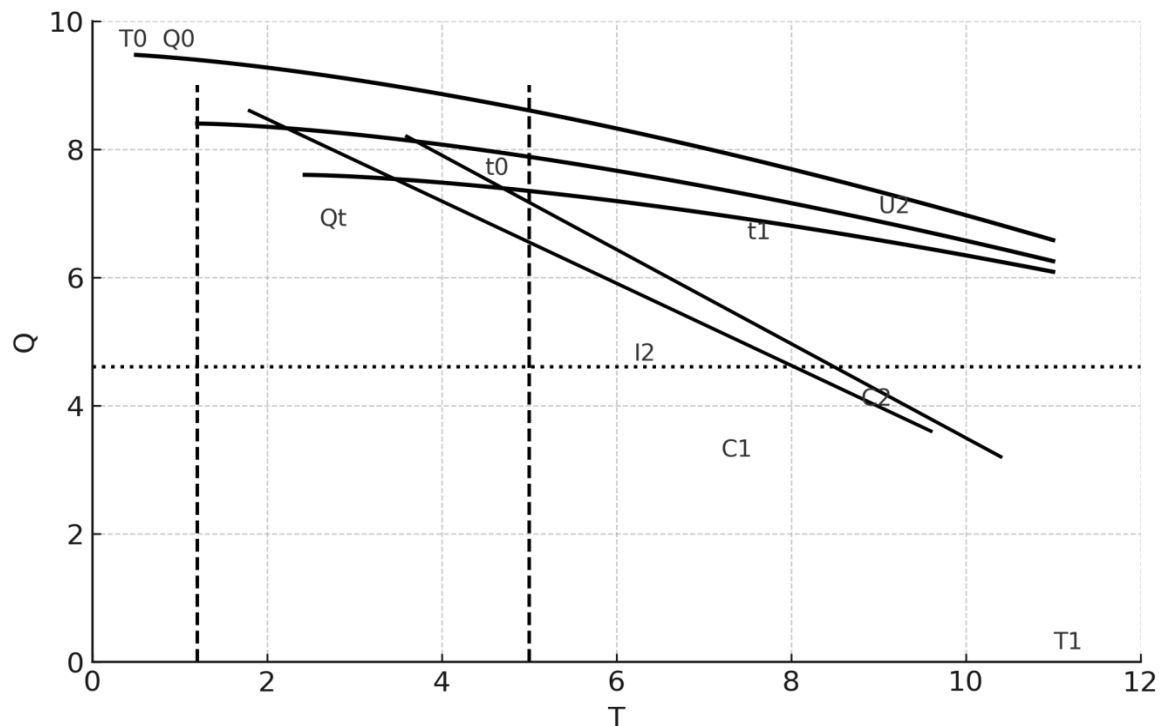
Source : Krugman, P. R., & Obstfeld, M. (2009). *Économie internationale : Théorie et politique* (8e éd.). Bruxelles : De Boeck.

The transition from price P_1 to P illustrates a shift from protectionism to trade liberalization through the abolition of a tariff on a good X , whereby $P = P_1 / (1+t)$, with " t " being the customs tariff imposed on good X ; thus, according to the figure above, consumers will find themselves in a better situation and gain from the tariff dismantlement, since they pay less for each consumed unit, whether domestic or foreign. Their demand increases, although the domestic supply decreases, indicating a loss for producers, while a significant imported quantity satisfies the domestic demand; they gain in surplus, since it shifts from the area DIP_1 to the triangle DGP following the tariff's abolition, and this increase is therefore measured by the area P_1IGP .

II.3 General Equilibrium Analysis

According to a significant body of economic thought, beginning with the classical school, trade liberalization enables a country to consume beyond its production possibility frontier (PPF), whereby consumers attain a utility level U_2 that is superior to U_1 , the level of utility under autarky; in the figure below, trade liberalization through tariff dismantlement allows consumers to move from point C_1 to point C_2 , consequently increasing the level of well-being or satisfaction (U_2 being greater than U_1).

Figure No. 2: Effect of Trade Liberalization in a General Equilibrium



Source : Salvatore, D. (2013). *International Economics (11th ed.)*. Hoboken, NJ : Wiley.

II.4 Tariff Dismantlement: The Case of Regional Integration

In the context of a customs union or a Free Trade Area (FTA) that applies a discriminatory external tariff towards third countries, it becomes essential to balance two opposing phenomena: a "trade creation" effect, which enhances welfare, and a "trade diversion" effect, which diminishes it. (Berechid, 2005)

a. The Trade Creation Effect:

The liberalization of exchange through tariff dismantlement—the suppression of customs duties—between member countries of the customs union or FTA fosters intra-bloc trade, while simultaneously enabling a more efficient allocation of resources; this occurs as previously protected, inefficient domestic production is replaced by cheaper imports from within the union.

b. The Trade Diversion Effect:

If a country maintains a discriminatory external tariff that protects industries from partner countries to the detriment of more efficient third-country producers, the consequent price inflation of imports from third countries due to this tariff leads signatory states of an association agreement to substitute them with costlier, yet tariff-free, imports from

FTA member countries; thus, sourcing from partners instead of more efficient third countries constitutes a clear diversion of trade.

c. The Net Effect:

The final impact of a discriminatory commercial policy that maintains tariffs on third countries—the regionalization of trade—depends on:

- The level of tariffs before the union, for if initial customs duties were higher, there would be significant trade creation;
- The level of the external tariff, since the lower it is, the more limited the trade diversion effect will be;
- The intensity of trade between member countries, for if they previously traded little with the rest of the world, the trade diversion effect will be weak.

Considering all the above, regional integration through the implementation of Cooperation Agreements (ACP) will ultimately enhance well-being only if the trade creation effect surpasses the trade diversion effect.

III. Prior Research

Rutherford et al. (1997) concluded that the effect of regional integration for Morocco could be positive for welfare, albeit relatively modest; however, Chatti in 1999, utilizing a different model for Tunisia, found that regional integration with the EU resulted in a welfare loss, while Rustrum et al. In 1995, also in a model concerning Tunisia, argued that the trade diversion effect—which induces a negative impact on welfare—is overcome when, in the initial situation, the majority of trade is already conducted with the same EU partner, indicating a preponderance of existing trade.

IV. The Relationship Between Tariff Dismantlement in Algeria and Household Welfare :

IV.1 Modeling :

To analyze and quantify the effect of establishing a free trade zone with the European Union, which translates to an abolition of customs duties, we are constructing a Computable General Equilibrium (CGE) model tailored to the Algerian economy, for CGE models take into consideration the interdependence between economic agents and all possible interactions. Our model is based on a Social Accounting Matrix (SAM) developed using data from the National Statistics Office for the year 2012, which is the year for which the maximum amount of data could be collected (Mennad & Benbayer, 2017).

We have opted for a static model of Walrasian essence; it is a real model replicating the flows as presented in the Algerian SAM with economic agents

derived from the Supply-Use Tables of 2012, and we advocate the assumption of perfect competition; thus, the consumer maximizes their utility function defined by a CES (Constant Elasticity of Substitution) function for choosing between different products, subject to their budget constraint (income), with fixed shares defining the allocation of their income constituted from wages, returns on invested capital, and transfers received from the state or the rest of the world.

IV.2 Welfare Measurement:

In this study, we have opted for the calculation of EV (Equivalent Variation) within the CGE model to observe its variation when moving from the benchmark situation to the FTA scenario.

EV Definition: The calculation of the EV allows for the determination of the percentage of consumption, whether an increase or decrease, that the household gains or loses in each period of an economic policy shock (simulation); it is the equivalent variation as a percentage of consumption expenditure from the base situation, which is nothing other than the percentage change (%) in utility when we have a homothetic utility function like the CES or Cobb-Douglas, expressed as $EV/CHO = (util/utilo - 1) * 100$, and the equivalent variation in monetary units is derived from this preceding formula.

Where:

- CHO: represents the budget share allocated by households for the consumption of product i in the reference (initial) situation before the application of a shock.
- Util: is the new level of utility after the shock.
- Utilo: is the level of utility in the initial situation.

IV.3 Data and Results

Our data are collected from the Algerian National Statistics Office (2012) as well as from the GTAP database for determining technological parameters, particularly elasticities, and our model is solved using the GAMS software. Well-being is thus measured by the Equivalent Variation (EV), and we proceed with simulations to quantify the impact on this metric, with our central scenario being the abolition of customs duties towards the European Union.

Employing a neoclassical closure, we maintained a fixed budget balance, a choice which significantly influences the adjustment variable of state transfers to households, and similarly, the trade balance remains exogenous.

Results: Abolition of Customs Duties towards the EU

Different Aggregates	% Change
Wage Rate	-0.01
Household Income	-1.68
Household Savings	-1.84
Government Revenue	-5.67
Government Transfers to Households	-39.94
Total Savings	-0.77
Total Real Household Consumption	-0.28
Real Investment Goods Expenditure	0.84
Total Exports	2.93
Total Imports	3.94
Imports from the EU	13.95
Imports from the Rest of the World	-3.16
Real GDP at Market Prices	-0.80
Import Price Index	-3.88
Equivalent Variation as % of GDP	-0.28

Source : Our simulation results

From an initial reading of the results, we observe a negative trade diversion effect in favor of the European Union, which explains the negative variation in several household-related indices; indeed, although the results are modest, the overall trend is negative as household incomes decrease, and their savings and consumption follow suit. The Equivalent Variation, which economically translates welfare, also follows a negative trend (-0.28%). Furthermore, through our simulation, we noted a decrease in the demand for labor concomitant with a contraction in local production.

V. Conclusion :

Measuring well-being remains a complex, if not challenging, process, as surveys emphasize the relativity of well-being perceptions, where a survey conducted among the wealthiest social classes (relatively wealthy individuals) identified factors with psychological tendencies in assessing well-being, which are inconsistent with the perceptions of the world's dominant social classes, specifically the poor and middle classes, because obtaining work (income) remains the key to well-being, while the confusion between well-being and

happiness exacerbates the ongoing debate on this topic, such as consumption expenditures versus spending power (Filmer & Pritchett, 1999).

In this study, we chose a common measure among modelers of well-being assessment (CME), which is simply a monetary version of the utility widely studied in microeconomics, represented by the "equalizer" or indifference curve, as we have seen that consumers, in theory, benefit from trade liberalization; however, in our model, the assumptions adopted and the characteristics of the model and the economy led to counterproductive results. We modeled selective tariff dismantling (EU only), so the results depend heavily on the choice of functional forms and technological standards.

Our results do not support a preferential trade policy, so we emphasize the role of the state, which must accompany any reform, whatever it may be, to better manage transition situations, preserve jobs, and support consumption, while dynamic models can also lead to outcomes that may vary over the long term, with a return on investment achieved, as well as overlapping generation models suggest that income disparities lead to disparities in long-term growth rates due to employees' behavior in investing in human capital" (Patrick Artus, 1993).

V.1 Recommendations:

Based on these findings, we strongly recommend a recalibration of Algeria's commercial integration strategy, moving beyond a simplistic tariff-removal approach towards a more holistic and strategic framework; firstly, any further liberalization must be pursued multilaterally or within broader regional agreements to mitigate the adverse effects of trade diversion, rather than through selective partnerships that disproportionately benefit a single bloc.

Concurrently, the state must proactively implement robust domestic policy complements to shield vulnerable households and sectors during the transition, which includes deploying targeted fiscal instruments (Larue & Gervais, 2002) to compensate for lost tariff revenues and to finance direct income support programs, thereby stabilizing household consumption and preserving social welfare in the face of economic adjustment.

Furthermore, strategic investment must be channeled into enhancing the productivity and competitiveness of the domestic productive fabric, particularly in non-hydrocarbon sectors with export potential, as this requires prioritizing structural reforms that improve the business climate, foster innovation, and accelerate human capital accumulation, thereby enabling local enterprises to withstand import competition and to capitalize on new export opportunities.

Finally, we advocate for a continued and refined program of impact assessment, employing dynamic CGE models that can more fully account for capital accumulation, technological change, and long-term growth trajectories, for it is

only through such nuanced, evidence-based, and strategically sequenced policymaking that the theoretical promises of trade liberalization can be reconciled with the pragmatic goal of tangible and equitable well-being improvement for the entire Algerian society.

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VII. Appendix: Public Services and Well-being!

Population Satisfaction with Public Services

