

Sensitivity of Argentine exports to world exports

*Alberto M. Díaz Cafferatta**

Ma. Cecilia Gáname

Pedro E. Moncarz

Instituto de Economía y Finanzas - Facultad de Ciencias Económicas – U. N. C.

Abstract

The Argentine exports performance is examined focusing on its association with world exports, an approach motivated by four stylized facts: the existence of international BCs; trade is a main channel of transmission; globalization has increased international ties; SOEs are more vulnerable to external shocks. We have found a cross-correlation of Argentine and world exports cycles of 0.67 for 1960-1997, a stronger synchronicity in open sub-periods, and an elasticity of exports with respect to world exports positive, greater than one and significant. These results suggest that external influences on Argentine exports should be better understood and incorporated in economic policy design.

Keywords: Argentina; cycles; exports; world trade.

JEL: F1

I. Introduction

This paper examines empirically the performance of Argentina's total exports, focusing on its association with the evolution of world exports. We intend thus to learn about the degree of response of the country's flow of total exports to changing exogenous general international conditions for trade and the fluctuations of the world economic activity. This external influence is distinguished from the incentives to exports coming from a complex array of complementary domestic determinants, such as the country's economic structure, macroeconomic conditions and policies, and also differentiated from changes in international determinants specific to the Argentine exports such as international exports prices or its access to markets. The appropriateness of the small open economy (SOE) as the theoretical framework as well as the policy implications are discussed.

As a first illustration of the issue, a glance at Table 1 suggests that the dynamism of Argentine exports in the nineties was related to changing world exports growth over the period. Is this empirical picture, intuitively acceptable, a too obvious conclusion that deserves further attention? Not really. Looking at it more closely a number of questions arise.

* Corresponding author Av. Valparaíso s/n. AP 4. CP. 5000 Córdoba. Argentina. Phone number: (54-351) 4334089/91. Fax: (54-351) 4334436. E-mail: diazcaf@eco.unc.edu.ar

Table 1
Exports of Goods and Services.
Average growth rate

	Current u\$s	
	Argentina	World
1990 - 1993	8.75%	6.19%
1994 - 1997	17.10%	9.11%
1998 - 2001	-0.20%	2.78%
1990 - 2001	8.32%	5.99%

Source: World Bank Development Indicators and Ministerio de Economía y Producción. Authors' calculations.

There are initially two relevant points. Firstly whether the coincidence shown is merely an accident, or if it is rather a **regular feature** of the Argentine economy. Secondly, whether the real and assets opening of the economy at the beginning of the decade increased the **degree of synchronization** of Argentine fluctuations with the international business cycles (BCs). More generally, how can exogenous shocks in a world economy with increasing ties between the industrial and emerging economies influence a SOE exports? Or, if there exists such a link which are the **transmission mechanisms**, and which is the magnitude of the relevant elasticities. We might continue asking if external shocks and fluctuations as determinants of economic choices are contemporaneously perceived as permanent or transitory. If these influences are common for the world economy, should the effect be expected to operate independently for all small economies? Can we learn from this approach to exports performance useful **policy implications**? It is worth exploring the existence and characteristics of such a link and assembling preliminary evidence for Argentina. A related point is whether the hypothetical explanations of the stylized facts are consistent with the usual small country assumptions and what would be the appropriate modeling features that would help understand total exports behavior.

1.1. Understanding the responsiveness of Argentine exports to world business cycles

In this paper the interest is primarily in exports, but the question is a particular facet of the more general issue: there is scant understanding of **how international business cycles and international trade cycles affect** (immediately and in the long run) the Argentine economy.

Studies dealing with Argentine economic fluctuations provide insights into the stylized facts and theoretical hypothesis of the dynamics of the country's macroeconomic cycles, growth a recessions, but the transmission of external shocks is not specifically addressed ¹. When variables of the external sector (such

¹ Recent papers in this line of research are Cerro, 2001; and Kydland and Zarazaga, 2001.

as the exchange rate or exports) are included there is not a specific modeling and measurement of the role of exogenous shocks in triggering Argentine BCs, how precisely the influence of world trade evolutions drive or condition the specific features of these fluctuations and how these external phenomena should be incorporated into the Argentine exports prospects at any given point in time.

It is not surprising that having neither a reliable method for quantitative estimation nor a development of applied theoretical analysis to explain how Argentine exports performance, trade and cycles are influenced by world income and trade trends, cycles and shocks, the undesirable consequence is that economic policies are designed largely assessing mistakenly, or disregarding, those external influences. The gap needs being filled. Since exports are a critical variable related to both macroeconomic equilibrium and growth, the determination of plausible targets for exports expansion is a significant issue. Signals from international markets can be more accurately interpreted, and errors that have been made both in private and government forecasting of Argentine exports (Díaz Cafferata, 1996) shall be reduced, with an adequate **understanding of exogenous world trade influences operating through different channels on the exports value and the incentives to export**. On this basis alert indicators and mechanisms that might provide better policy strategies and improved responsiveness of the economy to changes in external conditions can be formulated.

The task is demanding because errors in forecasting trade variables are common, and a substantial analytical and statistical effort will be required to build reliable exports predictions useful for policy. **Forecasting exports of small countries may be particularly difficult** as suggested by Keereman, 1999. In a recent study he finds that while the quality of predictions of the European Commission usually stand up quite well to tests on forecast accuracy, “the variables related to international trade are the most difficult to forecast ...”; an incorrect assessment of international economic developments is considered to be an important source of prediction mistakes (larger than the consequences of unforeseen exchange rate movements). And the **smaller countries represent the worst record of forecasting** performance: “small countries are more sensitive to international economic developments which are found to be an important source of forecast errors”.

1.2. Developing economies trade and the small open economy model

An appropriate approach is required. Stylized facts can be compared with predictions from the SOE model, with no transportation costs, no uncertainty and no international assets trade, because practical policy recommendations are heavily influenced by models of this type. A critical feature of a SOE is its high exposure to exogenous evolutions of the world economy, i.e. a high vulnerability. It is therefore most surprising that a phenomenon that appears intuitively to dominate the structural characteristics of individual SOEs is usually absent in analytical explanations of the Argentine economic trends and fluctuations. Rather, restrictions such as the arbitrage conditions in financial markets or the law of one price are of a

static flavor, but how precisely economic shocks and cycles of the world economy are transmitted to the SOE and critically **influence both private economic choices and trade strategies** remains largely an unanswered question. Two hypothetical sequences can be suggested. Firstly, a contractionary cycle (expansion) of aggregate economic activity in industrial countries reduces (raises) the demand for imports from developing countries. Since trade between industrial countries is also affected by booms and recessions, exports from developed and developing countries would move together and would be procyclical. Secondly, when world exports cycles are driven by fluctuations in variables facilitating trade (such as transport technology, trade restrictions or FDI), developing countries exports would be affected both by these forces and by the general increase in world trade. Positive correlation between the world and domestic exports series similar to the first case would be expected.

Emphasizing the practical implications of theorizing, Leamer, 1995, states that the central issue of international economics is how, if at all, governments should intervene in international commerce. The attention to the appropriate restrictions for modeling the influence of exogenous world economic phenomena in a particular country is a necessity, in an increasingly integrated world economy. Such a task belongs to the domain both of international economics theory and of quantitative measurement methods. Empirical work helps distinguishing models that are appropriate devices for organizing our thoughts in given circumstances from models that are misleading. Evidence of the existence and characteristics of a stable link between domestic and world exports, the possible existence of common shocks, or the transmission through trade of economic cycles abroad would help understand findings in empirical research about Argentine exports and choosing the appropriate theoretical model for analysis and policy.

The particular issue we pose in this paper, is the need of information on the extent to which the country's total exports are explained by their sensitivity to trends and cycles of world trade, the reasons for the existence of such empirical link and the policy implications as an input for evaluating interventions in trade in a small economy. Since exports themselves are related to other key economic variables such as economic activity, employment, the capacity to serve interests on the foreign debt or the role of international trade dynamics in the potential response of exports to changes in the trade regime, the issue is relevant for practical matters of economic policy. Thus: does unilateral trade liberalization guarantee a fast growth of exports flows? Which are the best international negotiation strategies to accompany a particular domestic trade regime? Are there specific economic institutions to provide insurance against external fluctuations needed?

Two "new" phenomena of the international economy are mentioned in the literature as possible causes for breaks in the relationships between developed and developing economies relative to past decades. One is the acceleration of financial flows. The other, the increased share of the South in global world production. The latter suggests the usefulness of extended three-region models with a North and

two types of countries in the South; alternatively, the number of countries may be seen as an empirical issue of aggregation. For the sake of highlighting the possible transmission of impulses from the international towards a domestic economy through trade channels we have chosen at this point to restrict the discussion to a two-country framework, a SOE and the rest of the world, and to disregard the effects of financial flows.

Section 2 is a brief presentation of the evidence on international business cycles, the mechanisms of transmission and the influence thereof on a SOE total exports evolutions; it is argued that the influence of world income and price evolutions on a SOE exports operates not only through "direct" signals on production and exports decisions of private agents, but also indirectly as a determinant of trade strategy choices. Section 3 assesses stylized facts of Argentine export performance and section 4 presents an econometric exercise to explore if there are indications that there exists the kind of links discussed. Section 6 concludes with a synthesis, policy implications and suggestions for further research.

II International business cycles and the small open economy

II.1. Evidence on international business cycles and policy implications

The Argentine historical experience is a valid reference in this matter. At the beginning of the XXth century the country was specialized according to its comparative advantage and appropriately integrated in the prewar international economic system. Díaz Alejandro, 1975, argues that the period of expansion from 1862 to 1930 was interrupted by **depressions caused in all cases by factors foreign to the national economy** like droughts, **changes in the world markets and fluctuations in foreign investment**. Prices crashed in the '30s and the debt run up in normal years proved difficult to pay.

As Meier, 1969, observed in the period 1870 to 1913, despite the discontinuities, countries like Argentina, Australia, Canada and New Zealand proceeded at a rapid rate through the transition from being underdeveloped to becoming advanced economies, and "the sustained absolute demand for primary products by the advanced countries were the principal reasons why the backward country's exports grew".

A plausible hypothesis to be discussed in the next section, is the indirect effect of cycles in exports through its influence on trade policy. The relative importance granted to cycles in practical economic policies is likely to diminish in a period when strong and sustained growth forces are operating. In contrast, the interest in understanding cyclical phenomena would increase when growth faints and uncertainty impairs more heavily expectations about investment and production benefits. More closely to our current problems, the interest on the issues involved in the international synchronicity of economic fluctuations has been clearly fostered by the Tequila, the Russian default, the Asian crisis and the reduced US income growth and the possible effects of a fall in its imports on emerging economies exports.

In the next paragraphs a few empirical findings on international BCs and related theorizing will be summarily mentioned. We are interested in evidence of the existence, magnitude and sources of international economic cycles, and of the role of trade as a channel of transmission as it would suggest a possible correlation of Argentine exports with the world income and exports. The method used for detrending will be reported when it applies, for comparison with our own procedure. A general question is the plausibility and mechanisms of a correlation between SOE economic variables and the fluctuations of world economic activity, as well as the behavior of exports.

Let us start by reporting some evidence and possible explanations of international business and trade cycles and the role of trade thereof. The actual finding of similarities in macroeconomic fluctuations can be accounted for either by a country specific shock that is transmitted to other economies, or by the presence of simultaneous common shocks to all the countries. Fabrizio and López, 1996, use a multi-country real business cycle model to analyze empirically the cyclical components of output for Germany, Japan and the U.S. The Hodrick-Prescott filter is used for detrending the series, recognizing the different results that alternative methods would provide. Common shocks are found to explain a large proportion of the variability of output and the main channel of propagation of the country's specific shocks is trade.

Co-movements of the large industrial economies are also studied by Gregory, Head and Raynaud, 1997. They decompose macroeconomic aggregates of seven industrial countries over the 70s and the 80s, into factors that are: i) common across countries and aggregates; ii) common across aggregates within a country and iii) specific to each individual aggregate. The results suggest that while certain fluctuations are country specific, some others are caused by worldwide shocks (like technological changes or oil prices) and these fluctuations tend to be world business cycles. The estimated world common component experienced a sharp downturn in the mid-1970s, a steady expansion throughout the mid and late 1980s and another sharp downturn in the early 1990s. Another result worth reporting is that the influence of the world cycle apparently differs from the 1970s to mid 1980s; differences in quantitative impacts suggest that not all recessions or expansions arise from similar conditions, suggesting that it would be interesting to incorporate a notion of regime switching, an extension whose main impediments are "availability of comparable data for groups of countries and sheer computational intensity of the estimation". The detrending of quarterly data for the period 1970:1-1993:1 is performed using the HP filter with a smoothing parameter 1600, and in another approach first-differencing the data in logarithms and analyzing the cycle in growth rates. They argue that a policy implication of their findings is that "if business cycles is indeed a worldwide phenomenon, then it may not be as responsive to domestic policies or influenced by domestic causes ...".

Kose and Yi, 2001(see also Backus et al, 1992) note that based on empirical research the importance of international trade is generally accepted in transmitting

BCs from one country to another. Pairs of countries with stronger international trade linkages tend to have more highly correlated BCs. They use a **model with transportation costs and trade in intermediate goods**, with production subject to a productivity shock. The domestic and foreign intermediates are combined via an Armington aggregate to produce a nontraded final good. Transportation costs are modeled as quadratic iceberg costs and are a stand-in for tariffs and other non-tariffs barriers in addition to transport costs. Two alternative environments with fully integrated assets markets and portfolio autarky show how the ability to run current-account deficits interact with the higher correlation that results from lower transportation costs.

Globalization can be expected to increase international ties. Hoffmaister et.al., 1998, provide econometric evidence that many countries in the South, particularly in Asia, appear to have become more resilient to cyclical movements in the North. A few determinants are put forward: more open trade and exchange regimes, closer financial linkages with the North and a substantial increase in capital flows, a marked rise in intraregional trade and greater diversification of the exports of the South.

II.2. Impact of international business cycles on the small open economy

Since a stylized fact of small open economies is the high degree of trade intensity as measured by the exports to GDP ratio (Chenery and Syrquin, 1977; Syrquin and Chenery, 1989a, 1989b) it is natural to expect their BCs to be triggered by exogenous changes in aggregate demand, interest rates or technology. A WTO, 1996, report points out that due to their smaller size and less diversified economic structure, many developing countries are more vulnerable to changes in the international environment than the industrial countries in an increasingly integrated world economy. Are world BCs and associated world trade cycles transmitted as impulses to SOE exports cycles? Our prior is that "world business cycles" are mainly industrial countries BCs transmitted to the SOE through trade and financial channels. Coincidental macroeconomic variables phenomena are consistent with procyclical world exports that generate exogenous impulses for SOE income and exports cycles.

Rhomberg, 1968, studies short-term variations in developed countries activity and the influence of their imports fluctuations from developing countries in the period 1950- 1965. "Trade in goods and services is the principal channel through which changes in economic activity in developed countries affect the economy of developing countries". Using annual data in a world trade model of the IMF, the weighted GNP elasticity of imports by the industrial regions from the rest of the world is slightly higher than the elasticity coefficient for volume of exports, consistent with low elasticities of demand and supply.

Pacheco Jiménez, 2001, argues that because of the particular conditions of BCs in economies that are small, open and developing, attention must be directed to variables like exports, the exchange rate or the importance of trading partners. He points out that "the literature on cyclical fluctuations in LDCs is relatively new,

scarce and limited to certain topics", most papers being devoted to studying the characteristics of the cycle, leaving the "initial impulses" and the "causes" (or key variables) as secondary elements². He suggests that **LDCs business cycles, mainly their turning points, can be understood as impulses emanating from developed countries** via variations in the relation with their developed trading and financial partner, and through random events like the oil crisis, rather than as purely endogenous processes. The mechanisms of transmission are the **trade channel** operating on the SOE exports (demand factor) and the **financial channel** related to the interest rate (cost factor). If shifts in the industrial countries demand for imports affect the SOE exports, GDP would move in the same direction and expectations about the future level of variables such as activity and the evolution of the exchange rate will be influenced.

Finally, in looking for external impulses of SOE business cycles and exports fluctuations the cases in which international cycles are transmitted through trade shall be distinguished from those in which a shift in external conditions that do not cause an international BC do however generate the impulses for a domestic SOE business cycle.

II.3. Total exports of a small open economy

A few conceptual issues related to the role of external shocks in influencing the exports performance of a small open economy will be discussed in this section. The lack of precise theoretical framework, both to explain total trade and to reconcile exports features of countries like Argentina with the SOE assumptions is pointed out. Then, three usual explanations of performance are reviewed as a perspective for the specific focus in this paper on the role of external economic fluctuations of exports of a small country. It is argued that there is an interaction between the above mentioned determinants of exports performance: external conditions not only influence exports directly through the transmission of cyclical phenomena, but also play a significant role in the choice of trade strategies, which influence themselves the degree of openness

Both in trade theory and in empirical studies there is an **absence of precise answers to the question of explaining total exports in an open economy**.

Deardorff (1984, p.469) observes in the Jones and Kenen Handbook that the theories of international trade answer only partially the three basic problems they are expected to solve: i) what goods do countries trade?; ii) with whom do countries trade?; iii) how much do countries trade?

Empirical work has been done in all three of these questions but, he remarks,

² Three groups of studies on small open economies BCs are mentioned. The first one focuses on documenting empirical regularities of small economies cycles (Backus and Kehoe, 1992; Ahmed; 1999; Agenor, Mc Dermott and Prasad, 1999; Rose and Reizman, 1999). The other two groups are analyses of single cases for industrial countries and for small, open and semi-industrialized economies; among the first type Mendoza, 1991; Roos and Rusell, 1996; Danthine and Girardin, 1989 can be mentioned; Kamil and Lorenzo, 1998 for Uruguay and Bergoing and Suarez, 1998 for Chile belong to the second.

the fundamental theories of international trade deal only with the first of them: what goods do countries trade, and why?; comparative advantage explains only the direction, not the volume of trade. There is **"a failure of most trade models to explain adequately the volume of trade, both in particular goods and overall"**.

II.4. The standard trade models

Two somewhat different aspects to be considered are on the one hand the static determination of total exports at a point in time under a given economic structure, and on the other the explanation of the evolution over time of total exports with a changing economy that is itself influenced by the trade conditions. The subject matter of this paper is related to the second issue; we ask whether the path of Argentine exports is dependent, to what extent and by what channels on the evolutions of the world activity and trade.

Three kind of variables explaining trade are **supply side variables** (of each economy, such as factor endowments, technology –i.e. factor productivity or "competitiveness"- and commercial policy), **demand side variables** (the determinants of the domestic and foreign demand for domestic exportables) and **costs of exchange** (which would be reduced by technological change in communication and transport). In a real model, these determinants can be synthesized in the usual reciprocal offer curves (OC) framework: a small open economy faces an infinitely elastic external OC; under the *small country assumption* the country faces exogenously given terms of trade.

As regards the demand side, why should the exports growth and cycles of a SOE be "explained" by world trade or world GDP? An intuition is that they are indicators of global demand for traded goods, hence providing expanding opportunities for exports. But the standard theory does not provide this prediction. In the standard Ricardian and Heckscher-Ohlin-Samuelson trade models, exports are determined by the degree of specialization (terms of trade) and preferences; the demand for exports facing the SOE is an infinitely elastic function at the exogenous world prices. Total exports is the aggregation of all sectoral domestic excess supplies of homogeneous exportable goods. The value of these exports depends on volumes exported and world prices, largely independent of the size or rate of growth of foreign expenditure, total world income or total world trade flows (variables that matter only in as much they are reflected in prices). Technological innovations and terms of trade shifts affect the SOE exports volume according to the change in the infinitely elastic world offer curve and the shape of the domestic offer curves.

Since alternative models would suggest different theoretical responses, a reasonable observation at this point is that gathering empirical evidence to the stylized facts would be useful to help choosing the appropriate approach and building useful models. The small country assumption might be tested using an equation of the type $XA_t = a + b.XW_t + c.YW_t + u_t$, rejecting the hypothesis of independence (i.e. the small country assumption) if the coefficients b and c are different from zero. As an alternative to the standard SOE assumption of

homogeneous goods a general function for aggregate exports in an imperfect substitutes model has been suggested³: $X_d = F(Y_w, P_x / E^*P)$, stating that the foreign country's (world) demand for exports is a function of its real income or expenditure and the relative price, which can be the terms of trade or the real exchange rate.

II.5. Three forces explaining exports

To provide further perspective on the issue, it can be noticed that three different (and complementary) explanations of a country exports performance found in the literature are firstly, domestic protectionist and interventionist policies; secondly, structural characteristics of the economy; thirdly, exogenous world tendencies of income, as well as volumes of trade and prices of traded goods.

Consider first domestic **policy induced distortions**. The standard theoretical explanation of the advantages of free trade for a small economy is based on the demonstration that tariff-induced distortions reduce trade and welfare. With this view the behavior of exports in a country like Argentina is perceived to be a consequence of decades of the country's trade and other domestic policies related to the import substitution strategy. Mundlak, Cavallo and Domenech, 1989, discuss the economic growth of Argentina in the period 1913- 1984. They argue that the degree of openness is a reflection of both government decisions and world market conditions, but the reduction in Argentine trade that took place after the Great Depression was the outcome of adopting high taxes on foreign trade. They estimate an equation for the degree of openness that captures the effect of trade policies, the distortion in the exchange rate value measured by the black market premium, government expenditures and monetary expansion. With this result, together with equations for the real exchange rate, the relative price of agriculture and the price of private nonagriculture, a system is built and the response of the endogenous variables to a program of trade liberalization is simulated, with the result that "if the Argentine economy had been more integrated with the world economy after 1929, the volume of trade would have been almost 70 percent higher than its actual level"⁴. They conclude also that if Argentina had followed policies that allowed it to fully benefit from its comparative advantage (basically, policies promoting an outward-looking economy) it could have attained a trajectory similar to that of Australia. This view belongs to the mainstream of current economic thought advocating for open growth strategies. For a review of the extensive literature that examines the crucial role of a country's own policies in affecting exports expansion see Balassa, 1990.

Secondly, as regards **economic structure** it must be noted that there are structural characteristics of the economy, namely size, factor endowments, distance from foreign markets, geography and sectoral exports orientation, that place Argentina in the group of "low exporting countries" (Chenery and Syrquin, 1977;

³ Balessiotis and Carone, 1997.

⁴ Mundlak, Cavallo and Domenech, 1989, page 55.

Syrquin and Chenery, 1989a, 1989b). Some of these structural characteristics of total trade like size and distance are usually incorporated in expressions of the gravity approach. The question arises whether there is a structural level of free trade exports, i.e. if there is a stable "structural equilibrium" level of exports that is a function of a set of slowly changing variables. We might call that equilibrium exports flow a "natural exports capacity" of the economy, such that forcing the economy to raise exports beyond this limit might be costly, short living and in any case welfare reducing (Díaz Cafferata, 1996). Structural transformation, rather than a mere removal of distortions might be necessary to achieve significant changes in exports, or in the exports to GDP ratio, and the gain of exports might be estimated as the difference between the level of exports under protection and the potential free-trade structural exports level.

Thirdly, granted the explanatory power of domestic structural determinants and of internal trade policies, we explore what can be learned by shifting attention from the above mentioned traditionally considered domestic determinants towards the role of exogenous external conditions. Exogenous international markets evolutions, such as income and trade growth and fluctuations, terms of trade trends and shifts and industrial countries protectionism altering market access have presumably influenced incentives. Prices have also affected the quantitative size of the indicators of openness. It appears evident to us that understanding how international economic phenomena affect Argentine exports shall provide useful information for private decisions and shall help building relevant policy scenarios and providing adequate responses to external shocks.

Standard trade policy recommendations for a small open economy

The first kind of explanation stressing the anti-exports bias of domestic protectionist policies has prevailed among local economists, leading in the '70s to a generalized agreement (in Argentina and elsewhere) on the recommendation of liberalizing trade. Consequently, the policy discussion shifted from the evaluation of the alternatives of imports substitution or free trade, to further issues. Namely, how to optimize the **transition process** (evaluating policy choices such as the speed and order of liberalization, the exchange regime, macroeconomic management or distributive impacts), and the effects of exports expansion on growth (with a substantial effort being devoted to the theoretical formulation and testing of the "export-led growth" hypothesis). The diagnosis involved a sometimes implicit, and frequently explicit optimism, taking for granted that rapid exports expansion would follow from trade liberalization.

This perception was apparent in the Argentine economic policy at the beginning of the nineties. In the official projections a strong growth trend of the Argentine exports was expected for the decade; 1993 was seen as the starting point of the Argentine export expansion with exports of goods and services rising from 16.2 to 43.4 thousand million dollars between 1993 and 2000 (see Ministerio de Economía, 1993, p. 94 and 154). Following two favorable years, the projection was revised upwards to a projected growth that would drive exports to 52.9 thousand million dollars in the year 2000. Was the optimism prevailing at that time justified?

As shown below, at first sight, episodes of trade liberalization in Argentina (in 1976-1982 and 1991-2001) might appear as having failed to put the economy in the path of a sustained dynamic *export-led growth* path. Why? Which of the above mentioned determinants of exports -policy, structure, world cycles- prevailed?

To provide some evidence on the issue, a few quantitative exercises are performed below for the evaluation of the role of world forces.

II.6. A policy perspective: external conditions and the pendulum of trade strategies in developing countries

World trade conditions have in practice both a direct influence on exports and an indirect influence through altering the incentives for policy choices. This feature is not replicated in standard SOE trade models, which provide two popular results. Firstly, the discussion about trade policy concludes that the optimal strategy is free trade without further intervention of the government in export or import markets, independent of external conditions. Secondly, the evolution of world trade *per se* doesn't affect domestic variables and is not a determinant of domestic decisions on factor allocation and the choice of techniques.

We will consider the consequences of changing somewhat this perspective of the standard trade models as regards exogenous world exports dynamics and the endogeneity of the trade strategy. There is not only a direct incidence of exogenous world income in trade fluctuations of SOE exports value, but also an influence on private choices and government policies that condition the allocation of resources.

Several developments in the world economy contribute to explain the current trend to pursue more open strategies. First, there has been a critical reconsideration of import substitution strategies, based both on the **experience of inefficiencies of Imports Substitution**, and the demonstration effect of the success of outward orientation. Second, there is a concomitant change in the role of the government towards a **more market-oriented** economic organization. Three, **WTO rules** set a stage for less intervention in trade; for many countries the conditionality associated with the World Bank and IMF lending programs pose similar exogenous institutional constraints. The fourth important influence we point out in this paper is related to the **external opportunities for exports expansion**.

On the one hand there is a broad agreement that trade is good. A strategy of total isolation of an economy is not defensible. On the other hand **challenges for 'absolute' free trade are the consequence of the type of dependence attached to economic relationships among nations**.

W. Arthur Lewis, 1970, extracted as a lesson of experience that rapid economic growth is indeed possible for the developing countries. "Underdevelopment is clearly not a vicious circle; it is an evil that we have the power to eradicate". He argued that "the secret of this achievement has been the unprecedentedly high rate of growth of foreign trade (since 1950); ... less developed countries can grow rapidly, so long as world trade is buoyant"⁵, emphasizing the **transmission of impulses**

⁵ Lewis, 1970.

from world trade to SOEs development (and implicitly the chain: expansion of world exports- developing country exports growth- export led income growth). At the same time, he warned that "since that process was peripheral to that of the industrial world, their engine of growth is still external and, as a consequence, is at the mercy of demand in industrialized countries, whereas in a developed country the engine of growth is internal".

External conditions, as perceived by a SOE, combine direct influences of the dynamics of world trade on exports through demand or prices (such as restrictions to imports from developing countries by the industrial economies) appear as a critical determinant in the **choice of the level of protection of a trade regime by developing countries**.

Pressures for protection are likely to arise when world market conditions for exports are dismal. The perception of external demand restrictions led to a critique of the relevance of the small country assumptions, and the derived policy recommendations towards free trade. The adoption of practices advocated by defenders of imports substitution strategies was consistent with the "export pessimism" of the time. The Prebisch's argument of the secularly declining trend of the terms of trade of primary products derived in a recommendation for industrialization that, after a "rather long transition" would change the structure of trade.

On the contrary, liberalization policies will more likely be recommended when foreign partners policies are also "pro trade". A favorable climate of trade negotiations, as well as a growing world trade, contribute to the perception that a positive effect of less restrictive policies on exports can be expected.

Krueger, 1983 (p.187), in the conclusions to the NBER study on alternative trade strategies, point out that it is crucial **for the developing countries to attain the potential gains from an outward-oriented trade strategy, to keep access to developed markets unrestricted and that these markets grew rapidly**.

What is then the appropriate policy approach to procure the gains from opening the economy and minimize the conflicts when the presence of external dynamics transmitted to the economy is explicitly recognized? The current attention given to exports is qualified by the emphasis on growth objectives, and the perception that exports can be the required 'engine' that shifted attention from statics to dynamics. It is not just free movement of goods across countries but growing exports that is required as a policy objective, as well as the way to attract external financing in the early stages of growth. The question is what is the domestic set of economy policies that will efficiently help generate exports growth associated with external demand pull (as different from domestic gains in efficiency and competitiveness).

A general rule of experience in Robert Lipsey's words⁶, is that "a bias towards exports, and particularly a pervasive, well publicized and stable government commitment to exports is most favorable to economic growth". But beyond this **qualitative principle** further knowledge is required to build trade projections and to forecast the quantitative effect of specific policy instruments. **The current state**

⁶ Cfr. the foreword to Krueger's, 1978, well known study for the NBER.

of the arts in the prediction of exports is still far from providing a firm basis for forecasting future foreign currency flows from this origin. There is much to be done when we get into the specific problem of predicting the path of total exports of an economy undergoing a process of rapid structural transformation.

III. Stylized facts of Argentine exports performance in the XXth Century

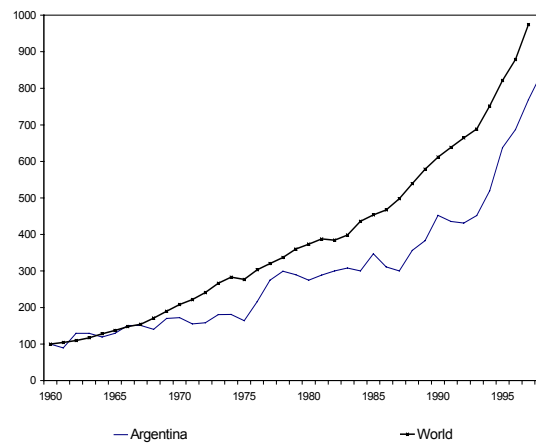
We begin this section by laying out a few outstanding facts using three indicators of the country's exports performance, as a first approximation to the data. We are interested in exploring whether it constitutes a stylized fact that, over the period 1960-1997, Argentine exports are positively related to world exports trends and cycles. We consider:

- i. The value of exports (current and constant prices; sub-periods; statistical properties; goods; goods and services)
- ii. The degree of openness of the economy measured by its ratio of exports relative to income (exports intensity);
- iii. The share of Argentine exports in world exports.

Total exports of goods and services at current prices grew at an average rate of 8.07% between 1960 and 1993, accelerating to a rate of 17.1% in 1993-1997, and then exports went down at a rate of 0.20% until 2001. A similar pattern is observed when exports expressed at constant 1995 u\$s are considered.

Figures 1 and 2 show graphically selected facts comparing the Argentine and world exports behavior over time.

Figure 1
Exports of goods and services
(constant 1995 u\$s - Index 1960=100)

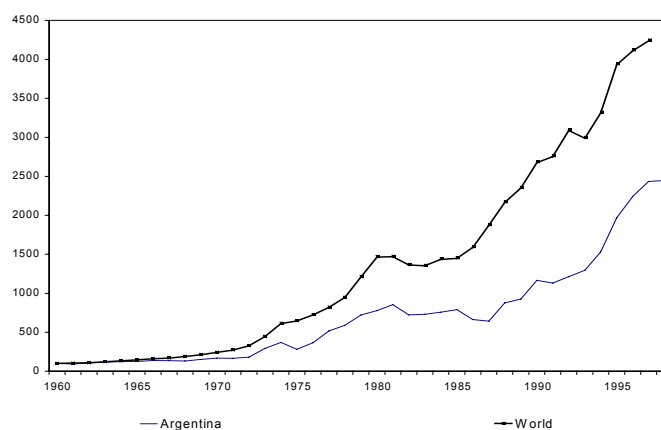


A first observation is that, even when both exports series show a positive tendency, the pattern of Argentine exports is quite more irregular, showing a more

intense growth rate during the second half of the '70 and '80, and also between 1994 and 1997. Instead, world exports show a positive growth rate during most years, with a much more stable evolution pattern, measuring it by the standard deviation of the annual growth rate.

Since the growing trends of total exports are partly associated with the long term increasing size of the domestic and the world economy, an interesting perspective is provided by scaling exports by the economy's output, using as indicator of the degree of openness of the economy the ratio of exports to GDP.

Figure 2
Exports of goods and services
(current u\$s - Index 1960=100)



In 1913 the share of exports in GDP in Argentina (in current local currency) was 40%, and reached a peak of 47% in 1919. It then slipped down to a range of 5% to 8% in 1950, and remained thereafter fairly stable around 10%⁷ during the second half of the XXth century (Cavallo and Mundlak, 1986) despite the sustained growth of world trade in this period. If we compare the goods and services export intensity ratio (X/DGP) for the last forty years we observe that in contrast with a continuous growth of the trade intensity ratio for world data (this fact is more accentuated when considering world exports at constant prices), the Argentine export intensity ratio is fairly stable, with jumps in the late '70s, '80s and '90s (Figures 3 and 4).

Had the degree of openness of the Argentine economy (measured by the export intensity ratio) accompanied the evolution of this indicator for the world during the last 40 years, exports at current prices would have been roughly 15% of GDP in 1997, some forty percent greater than the observed figure of 10.5%. For a GDP of

⁷ Please notice that the value of the exports/GDP ratio varies when it is measured in current or constant prices, or in different currency units.

about 300.000 million dollars exports value would have reached 45.000 million dollars, some fifty percent more than the actual figure of 28.000 million dollars for that year.

A complementary view of the same process is provided by the fall of the share of Argentine exports relative to world exports. As Figure 5 shows, when we work with current (constant) prices this share falls from 0.8% (0.5%) in 1960, to less than 0.5% (0.4%) at the end of the XXth century. This loss of weight of Argentine exports is even more important if we compare it with the values observed at the beginning of the '50s, when Argentine exports accounted to approximately 2% of world trade.

Figure 3
Exports of goods and services
(Percentage of GDP - constant 1995 u\$s)

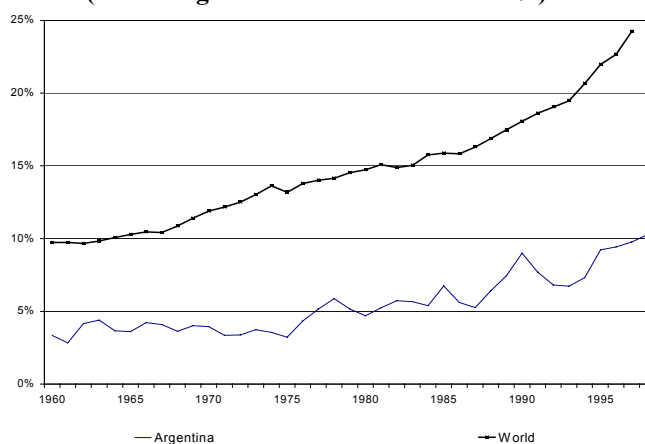


Figure 4
Exports of goods and services
(percentage of GDP - current u\$s)

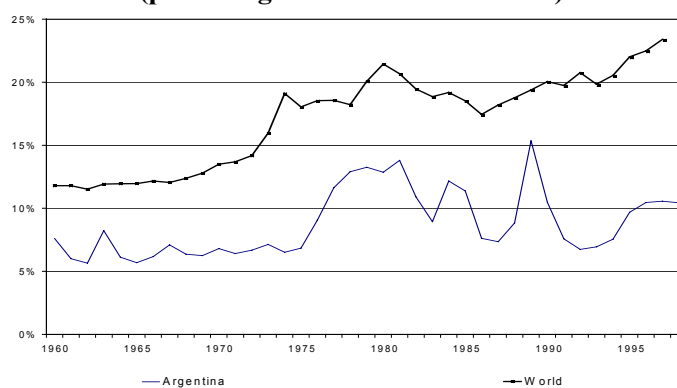
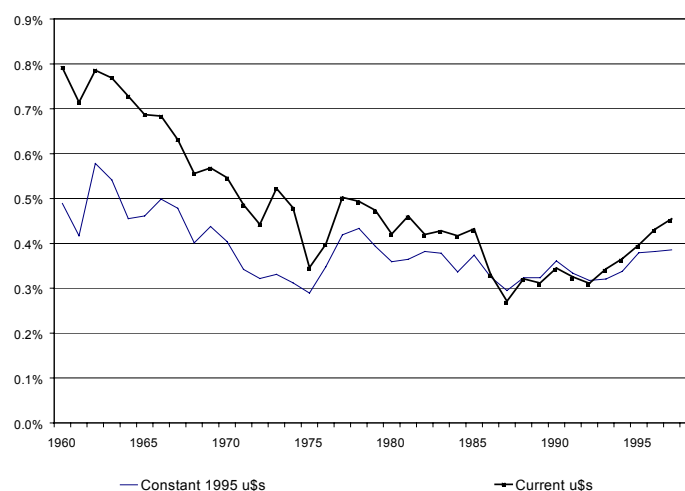


Figure 5
Argentina. Exports of goods and services
(percentage of world exports)



III.1. Stylized facts

1. The sign of Argentine exports trend is associated to world exports
2. The degree of openness measured as the ratio of exports to GDP is quite constant for Argentina in the period 1960-1975, showing then a slowly positive trend. The behavior is more volatile when we work with the series expressed in current prices. This behavior contrasts sharply with the phenomenon of a rapidly increasing openness in the aggregate of the world economy.
3. The Argentine exports grows less than world exports. In consequence the share of Argentine exports in world exports declines.

To find new stylized facts considering cycles, a detrending procedure is performed. In the next section the Hodrick-Prescott filter is used with this purpose.

III.2. New stylized facts: cross correlation between cyclical components of the Argentine and world exports

To gather further evidence, we examine the behavior of cyclical components. The series are decomposed using the Hodrick-Prescott (1981) filter. Enders, 1995, points out as a benefit that it can extract the same stochastic trend from a set of variables, a result that is consistent with many real business cycle models.

A series y_t is decomposed into a trend g_t and a stationary cyclical component, $c_t = (y_t - g_t)$; the g_t sequence minimizes the following sum of squares:

$$\sum_{t=1}^T (y_t - g_t)^2 + \lambda \sum_{t=2}^{T-1} [(g_{t+1} - g_t) - (g_t - g_{t-1})]^2$$

The parameter λ penalizes fluctuations that are incorporated in the long-run trend; as λ grows, the trend becomes smoother. Ahumada and Garegnani, 2000,

indicate that λ should be simultaneously estimated by maximum likelihood method, an advise that is not followed in practice in the literature due to the complexity that it involves.

The usual procedure is to take a prior λ -equal to the ratio of variances of the cycle and the trend-, derived by Hodrick and Prescott based on the assumptions that the cyclical component and the second difference of the trend component are normally distributed. The value of the parameter they estimate is $\lambda=1600$ for quarterly data, which implies that the variance of the cycle ($\sigma_c^2=5$) is higher than that of the long- run trend ($\sigma_g^2=1/8$). Other authors have estimated this parameter for different frequency observations. As it is mentioned in Ravn and Uhlig, 1997, Backus and Kehoe, 1992, have adjusted an annual λ value from the prior quarterly λ by a quadratic approximation ($\lambda_{\text{annual}}=100=s^2 \lambda_{\text{quarterly}}$, where $s=1/4$ is the ratio of frequencies). Cooley and Ohanian, 1991, and Correia, Neves and Rebelo, 1992, have selected a linear approximation from the prior λ ($\lambda_{\text{annual}}=400=s \lambda_{\text{quarterly}}$). Ravn and Uhlig have themselves estimated λ values for different frequencies of observation maintaining the transfer function of the filter invariant to these frequencies. They obtained an annual $\lambda=6.25$ multiplying the prior value by the fourth power of the frequency ratio ($\lambda_{\text{annual}}=6.25=s^4 \lambda_{\text{quarterly}}$).

Since the suggested λ results from specific assumptions about the distribution of (c_t) and ($\Delta^2 g_t$) and in consideration that there are different criteria to estimate this parameter for different frequencies (annual, monthly), Ahumada and Garegnani warn that the H-P filter should not be used in a mechanical fashion. A good practice should “evaluate whether or not estimated growth and cycle reject the conjectured behavior”, to correctly distinguishing trends and cycles. One should test how the estimated components behave. Following their recommendations, once the H-P filtering has been performed, we check if estimated cyclical components of Argentine export and world export series are stationary; then we try to detect a possible cross correlation between them⁸.

III.3. Stationarity

The stationarity of the cyclical component in the Argentine export and world export series is tested using the Augmented Dickey-Fuller test (ADF). The results, when $\lambda=100$ has been used for filtering, are reported in Table 2. The null hypothesis of the presence of unit roots can be rejected for both series at the 1% level of significance.

Since the series of cyclical components examined are obtained, as was explained above, using an arbitrary λ , a second estimation considering a $\lambda=400$ is carried out to get an informal indication of sensitivity that an estimated nonstationary cyclical component is more likely to appear. The results show stationarity of the world cyclical component series at 10%; a different level of

⁸ We use the same methodology applied by Ahumada and Garegnani, 2000, to macroeconomic series (consumption, investment, trade flows and money supply) of Argentina.

significance than that of before. We conclude that both the Argentina and world series look stationary though it is important to remark that these results depend on the value of λ for the world cyclical component.

Table 2
Unit-root Test
Argentina and World cyclical components of export series

Export Cycle ($\lambda=100$)	ADF(j)	Critical value*
Argentina	ADF(3) = -3.20	-2.63
World	ADF(3) = -3.72	-2.63

*Significance at 1%.

The test equation does not include the constant because the plot of the cyclical component does not show evidence of a drift. j indicates the number of lags.

Due to the fact that both series do not present unit roots, we are ready to test whether there exists a genuine cross correlation between them.

III.4. Testing for genuine cross correlation between the series

To evaluate whether a genuine correlation between both series exists, sample cross correlation is tested considering the asymptotic distribution:

$$r_{xy}(h) : AN \left(0, T^{-1} \left(1 + 2 \sum_{j=1}^{\infty} \rho_x(j) \rho_y(j) \right) \right)$$

where: $r_{xy}(h)$ is the sample cross correlation at lag h between x and y stationary series; T is the sample (number of observations); and $\rho_x(j)$ and $\rho_y(j)$ are the autocorrelation coefficient of stationary series x_t and y_t at lag j.

Table 3 reports the results of sample cross correlation between the cyclical component of the Argentina and the world exports. The second column shows the sample cross correlation coefficient. The third column reports the sample autocorrelation adjusted asymptotic standard error times the limit of 95% confidence interval for $\rho_{xy}=0$ ⁹. Rows consider the two different values of λ for which cross correlation is analyzed.

As can be seen, independently of the λ value chosen, we can reject the null hypothesis of $\rho_{xy}=0$ at 5% of significance of spurious correlation problem. The sample correlation coefficients are relatively high and are not inside the confidence interval for $\rho_{xy}=0$.

⁹ ρ_{xy} is the population cross correlation coefficient.

Table 3
Cross-correlation Test

Parameter λ	$r_{xy}(0)$	$(1.96T^{-1/2})(1 + 2 \sum_{j=1}^J r_x(j)r_y(j))^{1/2}$
100	0.666	0.418
400	0.749	0.440

r_x and r_y sample autocorrelations are calculated considering j lags with $j=1$ to $J= T/4$, following the methodology discussed in Ahumada and Garegnani, 2000.

IV. Argentine and world exports cycles: the influence of openness

Decomposing exports series into trend and cycles is useful for distinguishing two different possible influences of external variables. On the one hand, the long-run growth of world income, technological changes that reduce transport and communication costs, the slicing of the chain of production, determine a positive secular trend of international trade. On the other hand, there are supply and demand shocks causing short-run fluctuation or cycles. We have chosen to examine the cyclical components, looking for an explanation of the contribution of the cycle to the changes in total exports over time.

Figure 6.a
Argentina. Exports of goods and services
Annual growth rate decomposition:
trend and cyclical components
(u\$s 1995)

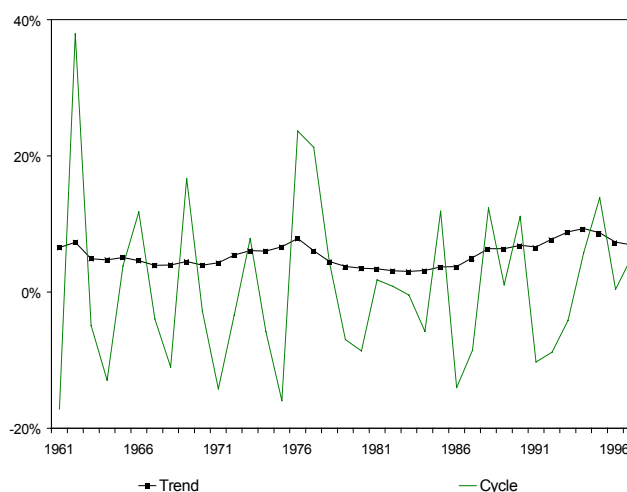


Figure 6.b
World. Exports of goods and services
Annual growth rate decomposition:
trend and cyclical components
(u\$ 1995)

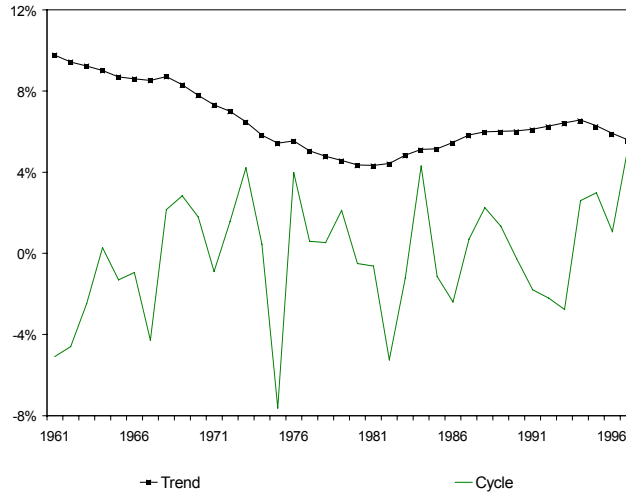
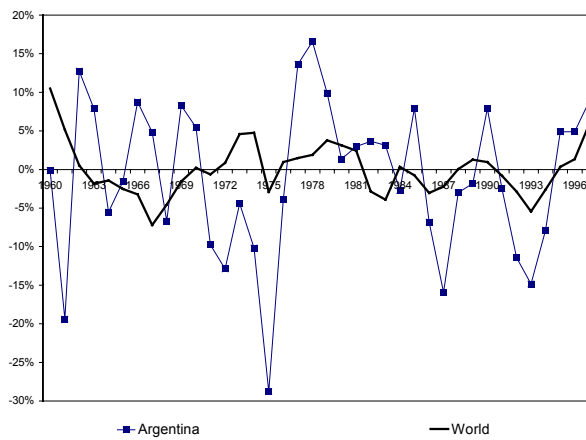


Figure 7
Exports of Goods and Services: cyclical component
(percentage of total exports of goods and services, 1995 u\$)
1960-1997



As was reported in the previous section, Argentine and world exports cycles show a positive and significant correlation for the period 1960-1997, with a cross-correlation coefficient of 0.67. This general result conceal specific characteristics of both series, namely:

- (a) Writing the annual rate of change of exports as $\hat{X}_t = \Phi_{t-1}^c \hat{X}_t^c + \Phi_{t-1}^g \hat{X}_t^g$,

where the super indexes c and g indicate cycle and trend components, and the weights are the fraction of each component in exports of the year $t-I$, the absolute weighted cyclical component is larger for Argentina in 31 out of 37 cases.

- (b) The cyclical component as a percentage of total exports, in absolute value, is larger for Argentine than for the world in 32 out of 38 years from 1960 to 1997.
- (c) Argentine cycles have a greater variance, either if we measure cycles as in point (a) or (b).

IV.1. Sign of the contribution of the cyclical component

The correlation of the direction or sign of the contribution of the cyclical component to the annual growth rate of total exports varies over time. It is apparent from a visual inspection of Figure 8 the presence of four sub-periods: these sub-periods are related to the commercial trade strategy in Argentina.

- (a) In the more open periods: 1976-1981 and 1991-1997 it is possible to observe a higher degree of synchronicity. Cavallo and Cottani, 1986, estimate an index of liberalization for the period 1950-1984 as a weighted average of the Terms of Trade Gap and the Degree of Openness of the economy. "Trade liberalization, as reflected by the index, took place in 1976-1981 (the Martinez de Hoz episode) and, to a lesser extent, in 1967-1970 (the Krieger Vasena episode). However only the 1976-1981 episode is truly relevant ..." not having similar index for the rest of the period, it seems reasonable to place 1991-1997 as relatively open compared with the previous decade.
- (b) Less open periods: in the years 1961-1975 and 1982-1990, those not labeled as "open", there is not an apparent pattern of correlation.

A closer examination of the direction of the contribution of the cyclical components of each series show that, for the whole period, when world exports growth is above the rate implied by its tendency (the contribution of the component cycle is positive) Argentine exports do either above or below its tendency (58% of the cases correspond to a growth rate greater than the tendency). On the other hand, when world export cycles show a negative contribution, Argentine cycles show the same pattern in 61% of the cases.

If we concentrate on the period 1961-1975, we find out a larger independence between the series, with Argentine cycles showing mostly a negative sign, specially when the world cycle direction is positive. In contrast, there exists a more correlated pattern in the period 1976-1997, with almost a 70% of the cases showing equal direction.

The independence of the directions of the contribution of the cycle to the change of exports can be tested using an independence Chi-square test. The null hypothesis (H_0) to be tested is that the sign of the contribution of the cyclical component of Argentine and world exports are independent of each other. The

observed Chi-square statistics is calculated as:

$$X_n^2 = \sum_{i=1}^j \frac{(Fe_i - Fo_i)^2}{Fe_i}$$

where: n is freedom degrees, with $n = (r-1)(c-1)$, and where $r=2$ and $c=2$ are the number of rows and columns of the matrix of events; Fe_i : absolute expected frequency of event i ; Fo_i : absolute observed frequency of event i

Figure 8
Cyclical component: contribution to the annual growth rate of exports

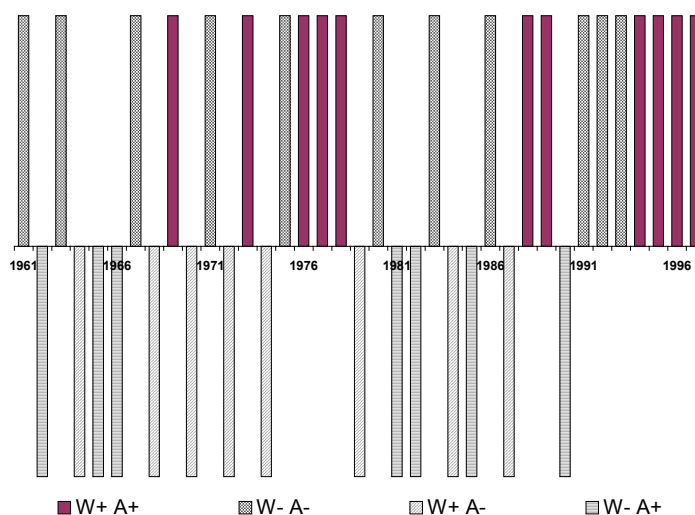


Table 4
Matrix of observed events of the cyclical component:
contribution to the annual growth rate

1961 - 1997				1961 - 1975			
World	Argentina		Argentina		World	Argentina	
	Positive	Negative	Positive	Negative		Positive	Negative
	Positive	11	8	2		5	Positive
Negative	7	11	3	5	Negative	3	5

1976 - 1997				Open periods: 1976 - 1981 and 1991 - 1997			
World	Argentina		Argentina		World	Argentina	
	Positive	Negative	Positive	Negative		Positive	Negative
	Positive	9	3	7		1	Positive
Negative	4	6	1	4	Negative	1	4

Source: Own estimates.

For the whole period 1961-1997, as well as for the years 1961-1975, the null hypothesis of independence cannot be rejected at the usual level of confidence. The

null of independence can be rejected at the 9.6% level of significance for the period 1976-1997. This last outcome is more robust if the test is restricted to the “open periods”. For the discontinuous period 1976-1981 and 1991-1997, the hypothesis of independence is rejected at a 1.5% level of significance. This finding supports the idea that more open economies are more exposed to external influences.

V. Determinants of Argentine exports: an econometric exploration

Total exports depend on a set of variables such as domestic trade policies, structural economic conditions and the evolution of world trade. Starting from this general argument, we estimate a function for Argentine exports of goods and services for the period 1960-1997. We refer the reader to Mody and Yilmaz, 1997; they estimate a demand function for manufactured exports using as explanatory variables the domestic export prices relative to world export prices, and a weighted world income. We have chosen to use the world trade variable as a more specific indicator of the level and fluctuations of external demand over time.

The function to estimate takes the following form:

$$\Delta \ln X_t^A = \gamma + \alpha_0 \Delta \ln \left(\frac{P_t^{Ax}}{P_t^{Wx}} \right) + \alpha_1 \Delta \ln \left(\frac{P_{t-1}^{Ax}}{P_{t-1}^{Wx}} \right) + \beta \Delta \ln X_t^W \quad (1)$$

where: X_t^A : is Argentine exports at constant 1995 US\$ for period t; X_t^W : is world exports at constant 1995 US\$ for period t and $\frac{P_t^{Ax}}{P_t^{Wx}}$: is the relative exports price index (1995=1) for period t.¹⁰

Mody and Yilmaz deem, the coefficient γ represents a “persistence effect” that is defined as the underlying growth rate that depends on variables such as domestic trade policies and economic structure, after price and world exports effects are accounted for. Parameters α and β are price and world exports elasticities, respectively. Our main interest is in the value and sign of coefficient β . Equation (1) is in first differences (Δ) because the three series are not stationary in levels but they are in first differences. About this Mody and Yilmaz observe that equations like (1) concern a short-run relationship between a country’s exports, its relative export prices and world exports. It is necessary, however, to take into account the possible existence of a long-run relationship between the three variables. If such relationship exists, the series are said to be cointegrated; in this case, equation (1) is misspecified. If the series are not cointegrated, a first difference equation is an appropriate specification.

Since in our case cointegration between the three variables cannot be rejected, we correct equation (1) by introducing as an additional regressor the cointegration residuals lagged one period. The equation to be estimated becomes:

¹⁰ Price indexes for Argentine and world exports were calculated by using the series at current and constant (1995) prices.

$$\Delta \ln X_t^A = \gamma + \alpha_0 \Delta \ln \left(\frac{P_t^{Ax}}{P_t^{Wx}} \right) + \alpha_1 \Delta \ln \left(\frac{P_{t-1}^{Ax}}{P_{t-1}^{Wx}} \right) + \beta \Delta \ln X_t^W + \phi \varepsilon_{t-1} \quad (2)$$

where ε_{t-1} are the cointegration residuals lagged one period.

Alternative specifications of equation (2) are obtained if we allow the possibility that parameters γ and β were not constant for the whole period. In the first case we test if the persistence effect changes as a result of the implementation by Argentina of different trade policies. In the second case, we test if there is an asymmetry in the world export elasticity, depending on whether world trade increases or decreases. These two additional specifications are suggested by Mody and Yilmaz.

For these two cases, the equations to be estimated are:

$$\Delta \ln X_t^A = \gamma + \gamma^* d + \alpha_0 \Delta \ln \left(\frac{P_t^{Ax}}{P_t^{Wx}} \right) + \alpha_1 \Delta \ln \left(\frac{P_{t-1}^{Ax}}{P_{t-1}^{Wx}} \right) + \beta \Delta \ln X_t^W + \phi \varepsilon_{t-1} \quad (3)$$

$$\begin{aligned} \Delta \ln X_t^A = & \gamma + \gamma^* d + \alpha_0 \Delta \ln \left(\frac{P_t^{Ax}}{P_t^{Wx}} \right) + \alpha_1 \Delta \ln \left(\frac{P_{t-1}^{Ax}}{P_{t-1}^{Wx}} \right) \\ & + \beta_1 \Delta^+ \ln X_t^W + \beta_2 \Delta^- \ln X_t^W + \phi \varepsilon_{t-1} \end{aligned} \quad (4)$$

where:

d : is a dummy variable for open periods, being equal to one for 1976 to 1981 and 1991 to 1997, and zero otherwise.

Δ^+ and Δ^- : make reference to those periods when world exports increase or decrease respectively

The authors point out that the possibility that exports volume and relative prices be simultaneously determined. In that case, equations (2) to (4) should be estimated using a two-stage least squares procedure. However, since we only try to explain Argentine exports, we can assume that exports prices are exogenous. This assumption is based on the presumption that Argentina is a small country. In consequence, the three equations are estimated using ordinary least squares.

V.1. Main results

Table 5 sums up the results of the three different estimated equations. In all cases the persistence effect coefficient is negative but is only significant at 5% level in the second specification, in which the dummy variable of commercial policies is considered. This fact has two important remarks: (a) the effect of the Argentine country features that we do not observe, like the infrastructure of the economy, had negatively influenced the growth rate of Argentine exports; Argentine persistence growth is -10.61%. (b) commercial policies that favored free trade have had a specific effect on the rate of growth of exports. When these policies were discriminated, a positive relationship was found. A more “open” economy contributes positively to the growth rate of exports. This relation can be seen in the last two specifications where the coefficients of the dummy variable are

significant at 10% and 5 %, respectively.

The price coefficient is significant in the three equations. If there is a 1% increase in Argentine relative export prices, Argentine exports diminish in a range of 0.43% to 0.69%.

Finally, the “world export elasticity” coefficient is positive and greater than 1 in all cases. In the two first specifications, if the world exports increase 1%, the Argentine exports augment 1.88% and 2.16%, respectively. In equations (2) and (3), the coefficients of world exports are significant at the 1% level. In equation (4), when the effects of positive or negative world exports changes are separated, the magnitude of the effects are different, but the coefficient is significant at the 5% level only when world exports increase, with a 1% change in world exports increasing 1.74% the Argentine exports. We must point out that world exports fall in only two years (1975 and 1982).

Table 5
Argentina exports function
(dependent variable: $\Delta \text{Ln}(A^X)$)

Coefficient	Equation 2	Equation 3	Equation 4
γ	-0.066 (0.150)	-0.106 (0.023)	-0.079 (0.139)
$\gamma \times d$		0.059 (0.087)	0.071 (0.045)
α_0	-0.435 (0.065)	-0.570 (0.012)	-0.690 (0.005)
β	1.879 (0.008)	2.165 (0.001)	
$\beta +$			1.739 (0.020)
$\beta -$			5.818 (0.272)
ϕ	-0.315 (0.035)	-0.405 (0.007)	0.337 (0.021)
Adjusted R ²	0.256	0.384	0.354
Durbin-Watson	1.700	1.886	1.890

(*) Significance level between brackets.

Source: Own estimates.

Cointegration residuals were calculated separately for each of three equations.

α_1 was dropped from all estimations since it was not statistically different from zero.

VI. Synthesis and conclusions

The Argentine exports performance is examined focusing on its association with world exports. We address the question of synchronicity motivated by four stylized

facts that are extracted from the recent literature on trade and business cycles: there is consistence evidence on the existence of international BCs; trade is a main channel of transmission; globalization has increased international ties; SOEs appear to be more vulnerable to external shocks. The interest in the issue of the transmission of economic fluctuations has been clearly fostered by the Tequila, the Russian default and the Asian crisis.

In the empirical analysis for Argentine exports cycles, we have found a contemporaneous cross-correlation with world exports cycles of 0.67 for 1960-1997, statistically significant. Further; a stronger synchronicity is found when the economy is more open, and the elasticity of exports with respect to world exports is positive and significant: The testing of independence of the cycles and the regressions of Argentine exports against world exports flows and prices, allowing for the role of trade policy and the possible asymmetry of effects, point out all in the same direction. These results suggest that external influences on Argentine exports should be better understood and incorporated in the design of economic policy.

The evidence, nevertheless, shall be interpreted with care. The different estimations performed suggested by experience and economic reasoning, do not test formally a specific economic model. A few methodological observations are therefore in order, revealing the need and possible direction of future research on the issue. Firstly, economic modeling is needed (i) for a formal justification of the stylized fact of correlation; (ii) for an identification of short and long run more precise than the distinction suggested by the mere filtering procedure that separates trends and cycles; there is not an economic justification for the testing of contemporaneous annual correlations; (iii) we have worked with exports at constant prices to find a phenomenon driven basically by real forces, but the role of changing prices has to be addressed. Secondly, the degree of aggregation both at the sectoral level and for the "two countries" framework arbitrary; Harrigan, 2001, argues that "cross sector variation in trade relative to output suggests that empirical work on understanding the volume of trade should work with disaggregated data"; also, the alternatives of higher dimensions and weighted trade are likely to provide new insights. Thirdly, the influence of external forces impinges against the efficiency of policy instruments, suggesting the usefulness of indicators of such a link and the design of economic policy that takes this effect into account.

To close after these comments, we think the findings reported in this paper should not be downplayed. Indeed, it is most interesting that a consistent response of the Argentine exports to the evolutions of the world exports has been found at this high level of aggregation, pointing out to a definite indication that there is a phenomenon that deserves close attention both because of the analytical interest and the policy implications.

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