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EXPORT TRANSITIONS

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EXPORT TRANSITIONS

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Resumen

Este trabajo tiene como objetivo identificar y estudiar las diferencias en el grado de orientación exportadora para una gran muestra de países en las últimas décadas. Primero, se utilizan matrices de transición para comparar cómo los países se mueven entre distintos segmentos de la distribución mundial. Los resultados muestran que los países que más han avanzado en la transición hacia mayores razones de exportaciones a PIB han sido las economías asiáticas, pero también países que han hecho importantes reformas estructurales, como Chile y México, han incrementado sus exportaciones significativamente. En cambio, casi la mitad de los países con un desempeño exportador pobre se encuentran en África. El análisis de estas transiciones muestra que la apertura de las economías al comercio internacional y la calidad de las instituciones juegan un rol importante a la hora de explicar incrementos significativos de la razón de exportaciones a PIB en el largo plazo. Finalmente, se identifican episodios de transición de las exportaciones para cada uno de los países. Usando la metodología de estudio de eventos, se encuentra una débil asociación entre transiciones, crecimiento económico e inversión. Los resultados muestran que las transiciones son potencialmente determinadas por cambios en el desarrollo financiero de las economías. En cambio, *shocks* favorables a los términos de intercambio, incrementos de productividad y reducciones de las distorsiones cambiarias no parecen ser relevantes para favorecer una transición.

Abstract

In this paper I use a broad multi-country dataset to analyze divergent experiences in export orientation over time. First, I use transition probability matrices for comparing how countries move across the world distribution for different time periods. I find that transitions toward high export ratios have been mainly experienced by Asian countries, but also some reformers like Mexico and Chile have been able to increase their exports significantly. Countries making transitions toward low export ratios are mainly from Africa, but these countries only constitute a half of economies with bad export performance. I focus then on which structural factors may be important for long-run transitions. The results suggest that more open economies and those with better institutions are more likely to move to high export ratios in the long-run. Finally, I explore within-country experiences for identifying episodes of export transitions. Using an event study methodology, I find a very weak association between export transitions and economic growth and investment rate. In contrast, my results suggest that transitions are potentially driven by improvements in financial development. Finally, favorable terms of trade, increments in productivity, and reductions in exchange rate distortions are not found to be a catalyst for export transitions.

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1. Introduction

Exports have been traditionally the subject of great interest to scholars and policy makers. It has been argued that, based on the East Asian countries experience, exports would be an engine of growth for developing countries. Diverse theoretical and empirical papers have taken these insights and discussed the so called “export-led growth” hypothesis. The successful experience of East Asian countries, however, is still controversial. For some scholars, economic growth in these countries has been driven by trade liberalization and outward orientation policies (World Bank, 1993). For others, economic growth would be explained by changes in investment profitability mostly associated to government specific policies (Rodrik, 1997). There is, however, little systematic evidence concerning countries experiencing significant increment in exports in a similar way to East Asian economies.

Recently, the main concern has changed towards whether globalization is benefiting all countries or just few of them. In some countries export have grown extraordinarily, but in other countries export have only increased to very modest rates. It seems that only a group of countries are taking advantages of growing trade liberalization around the world (Dollar and Kraay, 2004; Redding and Venables 2003).

Moreover, recent crises in developing countries have shown that trade openness, and specially export strength, may be an important factor for reducing the impact of external crisis. Calvo et. al. (2003) have argued that a more open tradable sector tend to reduce the required adjustment in real exchange rate and the occurrence of disruptive capital flows sudden stops. Guidotti et. al. (2004) provides also evidence that those economies that trade more are able to recover more quickly from output contraction associated to sudden

stops. Moreover, they show that exports are critical for this recovery. In the same vein, Edwards (2005a) shows that negative effects of current account reversals on growth are lower for more open economies (in such a case measured by total trade over GDP)¹. A recent paper by Desai and Mitra (2004) argues that financial crises tend to be less costly when economies have a strong export sector. Their model simulations are consistent with the idea that pre-crisis difference in export sector strength explains why recovery in Argentina was slower than recovery in Thailand. The idea is that the strength of the export sector is fundamental for renewing investor confidence and pushing post-crisis recovery².

In sum, trade orientation, and specifically exports, has been considered critical not only for long-run performance, but also for avoiding external crises and the negative effects of them. Then, how export orientation differ across countries?, how export orientation changes over time?. The evidence shows that there are significant differences in the exports-to-GDP ratio around the world, not only in the cross-section of countries, but also there are significant variations over time. In some countries, like Burundi, Rwanda and Japan, exports represent less than 10 % of GDP. While in other countries, like Malaysia, Singapore and Hong Kong, exports are about 200 per cent of GDP. The time dimension also illustrates these differences across countries. Between the 60's and the 90's, South Korea increased their exports as a proportion of GDP from 4.8 to about 40 per cent. Similar is the case of Nigeria (8.9 to 44.1 %), Philippines (13.9 to 47.9 %),

¹ García y Soto (2004), however, report that more open economies are more likely to experience current account reversals.

² These arguments are, however, not new in this literature. Several decades ago, Sachs (1985) argued that a key difference in vulnerability of a crisis between Asian and Latin American countries was the availability of export revenue to service debt.

and Thailand (15.9 to 54.2 %). In contrast, exports as proportion of GDP have been reduced in Zambia (55.0 to 27.8 %), in Libya (45.5 to 27.2 %), and Sierra Leone (29.1 to 15.8 %)³.

Yet there are some papers studying particular experiences, there is not systematic empirical evidence analyzing a large sample of countries⁴. There are, however, two papers exploring similar issues to those analyzed in this work. Ben David and Papell (1997) estimate different econometric models of structural change for exports-to-GDP and for imports-to-GDP ratios. The main objective in this paper is to determine if, and when, countries experienced statistically significant changes in the path of their trade volumes. These authors, however, do not analyze which factors could explain these changes. Recently, Redding and Venables (2003) study the cross-country differences in export growth and decompose this growth between two components: external market access and internal supply capacity. They find that external market access explain a considerable fraction of export growth. In addition, they show the importance of costs associated to internal and external geography in explaining cross-sectional differences in export supply. In this paper, I am not only interested in studying differences across countries, but also within-country differences overt time. Moreover, I use several variables to show which factors may explain these differences.

The objective of this paper is to extend the literature in three main ways. First, I identify which countries have experienced different experiences over time. The question

³ In term of ranking the differences are very significant. South Korea increased 59 places (going from the 94th to the 34th position), and Zambia descended 47 places (9th to 56th). This is ranking is computed for the common sample 94 countries with information for both 1960-64 and 1995-2001.

⁴ See Rodrik (1997) for a comparative analysis of South Korea, Taiwan, Chile and Turkey. All of these countries have experienced large increases in exports.

is not only how common are transitions from low to high export orientation, as experienced by East Asian countries, but also to identify which countries are well behind the most successful exporter economies. This is important to evaluate some claims that globalization only favors some countries. Second, I study which factors may explain that some countries may be not benefiting from globalization⁵. This may be a result of structural characteristics (such as distance from large and dynamic markets) or policy induced (such as trade barriers). Third, I evaluate how these and other factors may explain countries export transitions.

The paper is structured as follows. In the second section, I document the main facts about export orientation across countries and over time. In the third section, using transition probability matrices, the issue of persistence or mobility in export orientation is analyzed. In the fourth section, study in detail the within-country dimension of export transitions. The fifth section concludes.

2. Export Orientation: Main Facts

Export-to-GDP ratio is computed from the World Development Indicators using data for current exports and GDP⁶. The data covers the period 1960 to 2001. For some countries, however, information is not provided for the entire period. In Table 1, a summary of the data is presented for selected years. Note that the number of countries in the sample increases from 90 in 1960 to 150 in 2001. This Table shows that there is a significant increase in world average exports-to-GDP ratio, which has been accompanied

⁵ It must be acknowledged that globalization implies much more than lower trade barriers and increases in trade flows. This process is also related, for example, to lower restrictions to capital mobility. See Edwards (2004) and Braun and Raddatz (2007).

⁶ An alternative is to use export ratio measured in constant dollars, but the initial sample is largely reduced from 94 to 72 countries. In any case, the evidence tends to be similar when using both measures.

by a raise in the standard deviation of this variable. This is consistent with previous evidence showing that, even there is a significant increase in trade flows around the world, export performance tends to vary greatly across countries and that differences between high and low export performers have also increased (Redding and Venables, 2003).

Figure 1 shows more in detail how world average export has increased over time. In addition to simple average, I present the evolution of world average weighted by GDP and GDP per capita. The trend with these two alternative measures is similar, showing an increment in exports-to-GDP over time.

In Figure 2, I present the evolution of the export ratio for different regions of the world. The evidence reveals significant differences across regions. Exports have tended to grow relatively more for Industrial, Asian, and Eastern European countries. In contrast, Latin American and African countries display a relatively poor export performance. Some different is the case of Middle-East countries. In this region, exports have tended to be more volatile than in other regions, with an increasing trend in the first part of the period but a declining trend during the last decades.

3. Empirical Analysis of Transitions

There are two main questions to be addressed in this section. First, are there countries experiencing dramatic changes in export orientation?. The literature has focused mainly in successful experiences in several East Asian countries. Here, I analyze if there are other countries following the same path. I look also for countries experiencing poor export performance.

Second, by analyzing intra-distribution changes, I discuss if differences between low and high export performers have tended to increase. Provided that most of developing countries have liberalized trade policies and that world trade has increased largely during the last decades, I investigate if export expansion is uniformly distributed or only some countries have gained from world trade growth and liberalization. The main concern is whether low export performers at the beginning of the sample -the 60's - have been able to improve their export performance, or both low and high export performers tend to be absorbent states.

To do that, I follow a methodology applied by Quah (1993) for studying economic growth⁷. Consider a cross-country distribution of exports-to-GDP-ratio in a year t given by X_t . The evolution of this distribution over time may be described by the following law of motion:

$$X_{t+1} = M \cdot X_t \quad (1)$$

Where M is an operator mapping one distribution into another between two time periods, t and t+1.

Yet the law of motion for X need not to be first order or the relationship need not to be time-invariant, it is useful to assume this for analyzing intra-distribution dynamics in X. One advantage of this methodology is that iteration of the operator M yields a prediction for future, or long run, cross-section distribution:

$$X_{t+s} = (M \cdot M \cdot M \cdot M \dots \cdot M)X_t = M^s X_t \quad (2)$$

⁷ A similar methodology has been recently applied by Proudman and Redding (2000) and Redding (2002) for analyzing trade specialization dynamics and for Mancusi (2001) for studying technological specialization in industrial countries.

By letting $s \rightarrow \infty$ we can obtain the long-run distribution of cross-country export-to-GDP ratio. Then we can discuss if the long run distribution X_{t+s} tends to a point mass or to a bimodal distribution. This is a useful way to identify if countries are converging to different levels of exports. This would be the case suggested by those claiming that globalization increase world inequalities. It may the case that disadvantaged countries, for example those more distant from main trading centers, converge to low exports-to-GDP ratios. In contrast, better located countries may converge to a higher export ratio.

The law of motion described by (1) is generally simplified by discretizing the set of possible values of the variable under interest. In such a case, the operator M becomes just a transition matrix probability. Each cell of this matrix shows the conditional probability of moving between states over time, i.e., I may compute what is probability of moving from “bad” state (low export-to-GDP) to a “good” state (high export-to-GDP) for different time periods.

In this paper, the period 1960 to 2001 is divided into 8 sub-periods of 5 years each one (the exception is the last 6-year period: 1995-2001). This procedure is chosen for two main motives. First, it allows smoothing out our variable by reducing the importance of temporary export shocks (for example, one-year increase in exports attributable to transitory positive price shocks). Second, it maximizes the number of countries under study in cases where there is missing information for some year in particular. In such a case, the per-period average is computed only for the number of years with no missing information.

The average of exports-to-GDP ratio is computed for each of these 5-year periods and every country is allocated into 5 states according to their position in the world

distribution for this variable. By defining states in relative terms, I control for the worldwide increase in export volume that we have documented in the previous section. It is worthy to highlight the relative concept of what is defined as transition in this section. A “strong” increase in exports does not necessarily qualify as a transition in the case that all other countries are increasing exports. In this section, I look at changes in exports that are significant in comparison with variations in other countries exports.

To define these five states I use the percentiles of the distribution. For each period, I define four thresholds corresponding to percentiles 20th, 40th, 60th and 80th. Then, state 1 represents the 20 % of countries with the highest exports-to-GDP ratio. In the same way, state 5 corresponds to the 20 % of countries with the lowest exports-to-GDP ratio.⁸

This methodology is useful for analyzing intra-distribution mobility. For example, consider Brazil and Korea, two countries with similar export-to-GDP ratio at the beginning of the 60’s. It is interesting to look at how they moved to lower or higher export levels over time. In 1960-65, Brazil exported a 6.7 per cent of GDP, a larger fraction than the 4.8 per cent of Korea. In the last period, 1995-2001, the difference between both countries is dramatic: the export-to-GDP ratio in Korea is 38.7 % and only 9.2 % in Brazil. Similar evidence is found for Argentina. Between both periods, exports as a fraction of GDP have only increased from 6.3 to 10.4 %. It is interesting to note that Argentina and Brazil are cases of countries undertaking recent structural reforms⁹, but it seems that they are still trapped in low export states.

⁸ The choice of these thresholds is of course arbitrary. I have tried with several alternatives ways - varying the number of states and thresholds - and I find that the main results on mobility patterns are unchanged. There are, of course, slight differences in the number of countries making a transition, but the main message of this exercise remain unaltered.

⁹ According to Wacziarg and Welch (2003), both Argentina and Brazil have liberalized their trade regime in 1991. See Edwards (1995) for an early review on reforms in Latin America.

As it is illustrated in Figure 3, the performance of these countries is very disappointing compared to countries, such as Korea, that had a very similar initial export ratio. Then, I am particularly interested in analyzing how common is the Korean experience compared to low export performers in Latin America. Korea is the typical case of one economy that has experienced a transition from low to high export orientation. In contrast, in spite of recent reforms, some Latin American countries seem to be absorbed in low export states.

I am interested in three main questions. First, how countries transit over time? I want to know if there are a significant number of countries experiencing changes from one state to other. Here, the idea is to discuss issues of persistence and mobility by identifying how absorbent some states are. The second question is whether we can identify a significant amount of countries going from highest to lowest export orientation or in the other way around. There are many cases analyzed in the literature of countries experiencing positive export transitions, the most well known example is that of East Asian countries. Evidence, however, is quite scant regarding countries going in a bust. I look for more systematic evidence here. Finally, by estimating the ergodic distribution of the transition probability matrix, I discuss how the long-run distribution looks like. Evidence that, depending on structural characteristics, countries are converging to different export ratios would be consistent with the idea that globalization may be not benefit all countries, and some countries (for example, poorly endowed or more distant)

converge to low trade levels than countries richly endowed or those closer to growing markets¹⁰.

Evidence of Export Transitions

I calculate transition probability matrix for different time periods. Doing that, I am interested in analyzing whether transitions are more common in a longer span than in shorter ones. In Table 2, I show transitions between two adjacent periods (t and t+1), which I call “short-run” transitions. In Table 3, transitions between t and t+4 are presented, which are named as “medium-term” transitions. Given that periods are five-year average, this represents changes in export orientation in approximately a 20 year period. Finally, In Table 4, I show transitions between for the longest period in the sample: 1960-65 and 1995-01, which represent what it can be called as “long-term” transitions. For each transition probability matrix, every cell represents the probability $P(q/q')$ of being in state q in t+1, given that a country was in state q' in t, with q and q' $\in \{1,2,3,4,5\}$.

Three main facts are evident from the Markov transition probability matrix in Table 2. First, there is evidence of persistence in export status. All the elements in the diagonal are larger than 50%, showing that more than a half of country-observations do not transit to other states. Second, extreme states tend to be more absorbent than intermediate states; the probability of remaining in states 1 and 5 between two adjacent periods is about 80%. Third, transitions between extreme states are very unlikely. These results show that there are not short-run transitions between lowest-export-orientation (state 5) and highest-

¹⁰ This issue is particularly interesting in the context of the debate about the benefits of globalization. Critics of this phenomenon claims that may poor countries have not participated in the growth of world economy. For a discussion questioning the validity of these claims, see Ravallion (2004).

export-orientation (state 1 and state 2). Then, in general, when transitions exist they are concentrated in the neighbor states.

Not surprisingly, transitions are more likely in longer time periods. In Table 3, I present a transition probability matrix for country-observations ranked in t and $t+4$ (a 20 years-period). The evidence is similar to that Table 2, but it shows that the unconditional probability of staying in exactly the same state is lower than that obtained for five-year periods. For countries in the highest and lowest exports state this probability is 58.8% and 61.0%, respectively.

In Table 4 I show the transition probability matrix for the longest possible period under analysis. In this case, each observation corresponds to one country, i.e., I am comparing a country's state in 1960-64 with country's state in 1995-2001. As it can be appreciated, in general, states tend to be less absorbent than in the case for more adjacent periods. The only case in which the probability of staying in the same state is larger in the long-term compared to the medium-term transitions in the state of highest export ratio (65.0% and 58.3%, respectively). There are, however, some interesting asymmetries. For countries in the highest exporter state the probability of staying in the same state is larger than for these initially located in lowest exporter state (65.0% and 55.6%, respectively). Hence, the lowest export state tends to be less absorbent.

Which are the countries experiencing interesting export transitions? In Table 5, two groups of countries are listed: (i) those experiencing significant increase in export volume (transition up), and (ii) those who have experienced a transition toward a lower export to GDP ratio (transition down). In both cases, I identify these countries as those moving more than two states between the beginning and the end of the period. Table 5 also

presents the export ratio for the initial and final periods, and the variation in this ratio. Countries experiencing a transition-up have increased the export ratios in about 30 percentage points, and those with a transition-down have reduced their export ratios in 10 percentage points. Consistent with other studies, transitions-up countries are mainly located in Asia, with the exceptions being two Latin American countries –Chile and Mexico – and one African country, Nigeria.

In the case of transition-down countries, low performance seems to be associated mostly to be located in Africa. These African countries represent a 50% of countries transiting to low export states. There is only one Industrial country, Iceland, in this group; two Latin American countries, Peru and Venezuela; two Asian countries, Myanmar and Sri Lanka; and two countries from the Middle East; Egypt and Saudi Arabia.

Country Characteristics and Export Transitions

In this section I analyze the relationship between export transitions and some of the country characteristics that previous literature suggests are important for understanding export performance. I am particularly interested in the role of four factors: access to markets, factor endowments - mainly natural resources abundance -, trade policy, and quality of institutions. Specifically, I compute the ergodic (or long-run) distribution for the transition probability, and I then study whether countries that differ on these four main characteristics tend to converge to different export ratios in the long run.

Geography related variables are usually found to be important determinants of trade flows. Gravity equations show that trade is significantly reduced by distance between trading partners and increased by the existence of common borders. Moreover, there is a

growing literature trying to explain why the distance effect has not been reduced while transportation and information costs have diminished considerably¹¹.

For geographical characteristics, I follow Leamer (1997) in using a measure of economic distance based on typical estimations of a gravity equation. This variable – called access to markets - is a measure of how distant is country i to world GDP by weighting the distance between partners i and j for the importance of the country j in the world GDP. Specifically, this measure is computed as follows¹²:

$$DGDP_i = \left(\sum_j w_j D_{ij}^{-0.6} \right)^{\frac{-1}{0.6}} \quad (3)$$

Using the average of this measure between 1960 and 2001, I divide countries between those with low and high market access using the world median of this variable¹³.

Other discussion in the literature is concerning the export performance of countries abundant in natural resources. Are natural resources countries trapped in a low export-to-GDP ratio? Traditional arguments on this regard go from the low-price elasticity and secular deterioration of terms of trade for commodity exports argued by Prebisch (1950) and Singer (1950) to the more modern arguments regarding the impossibility of expanding exports without the incorporation of new products to export basket (Hummels and Klenow, 2005).

¹¹ This phenomenon was firstly noted by Leamer and Levinsohn (1995). Interestingly, a recent paper by Blum and Godfarb (2006) shows that this gravity effect also holds in the case of digital goods consumed over the Internet that have no trading costs. For a meta analysis on the effect of distance on trade, see Disdier and Head (2005).

¹² I check the robustness of my results using other measures of distance. First, the elasticity of 0.6 is changed to unitary elasticity. Second, using a simple measure of physical distance obtained from Gallup et. al. (1999). This is defined as the minimum air distance (in kilometers) to one of three main ports around the world; New York, Rotterdam, and Tokio. The evidence shown in this section holds when these alternative measures are used.

¹³ In other words, countries with low markets access or large distance to markets are those with D_i larger than the world median of this variable.

For exploring the role of factor abundance, there are not simple measures of how natural resources abundant a country is. Moreover, it is difficult to have information on endowments associated to comparative advantage in natural resources. For this reason, I use the widely available and used measure of natural resources abundance provided by Sachs and Warner (1999). This is measured as the share of primary exports in GNP in 1970¹⁴. Using this measure of resources abundance, I divide the sample between those countries with “low” natural resources abundance (below the world median) and “high” resource abundance (above the median).

There are also several papers explaining how differences in institutional quality generate differences in countries economic performance (Acemoglu, et. al., 2001, and Engerman and Sokoloff, 2000). In the case of international trade, Anderson and Marcouiller (2002) present a model where insecurity – attributable for example, to corruption and imperfect contract enforcement- acts as a hidden tax on trade. They find that poor institutional quality in terms of enforceability and transparency dramatically reduces international trade, and this effect is as much important as tariffs.

As a proxy for institutional quality, I use one of the six components of the Governance indicators developed by Kaufmann, et. al. (2005). This indicator corresponds to the rule of law index for the period 1996-2004. Taking the median of this variable, I divide the sample between those countries with low and high quality institutions.

To analyze how trade policy is related to the long-run performance of countries in terms of their export ratio, I use simply the percentage of years that a country is classified permanently open according to Wacziarg and Welch (2003)’s update of the previously

¹⁴ Though the negative relationship between growth and natural resources found by these authors has been criticized from different points of views, this is still used as benchmark for evaluating the robustness of their results to changes in the econometric specification (Mehlum, et. al. 2006).

indicator developed by Sachs and Warner (1995)¹⁵. Then, I define as “low” (“high”) trade openness to those countries with a percentage of years open below (above) the world median.

The results for the ergodic distribution in these four non-exclusive groups of countries are shown in Table 6. The states are enumerated from 1 (highest export ratio) to 5 (lowest export ratio). In the last two columns, I present the percentage corresponding to the two extreme states. These results suggest that there are differences in long-run convergence depending on country characteristics. In terms of institutional quality, countries with better institutions tend to converge to states with high export ratios. For example, only 7.1 % of “low” quality institutions countries converge to state 1. For countries characterized by “high” quality institutions, the percentage of countries converging to state 1 is above 25 %. Concordantly, only about 5% of countries with better institutions tend to converge to low export states. Compare to about 35 % of countries with low quality institutions that converge to this state.

There are also differences in the ergodic distribution depending of natural resources abundance, although they are less striking than those for institutional quality. Table 6 shows that less than 1 % of resources abundant countries converge to the highest export state, but almost 20 % of less resources abundant countries would be located in this state in the long run. This is confirmed by summing up countries in the extreme states, although the differences in probabilities are lower than the same differences for countries

¹⁵ In this indicator, a country is classified as “open” if (i) average tariff does not exceed 40%, (ii) non-tariff barriers cover less than 40% of its imports, (iii) does not have a socialist economic system, and (iv) black market premium on the exchange rate does not exceed 20%; and (iv) exports are not controlled by a state monopoly.

with low and high quality institutions. In fact, a similar figure of 50 % of the countries in low and high resources abundance converges to a low export state.

In terms of access to markets, Table 6 shows some important asymmetries between countries with “good” and “bad” market access. The percentage of countries with inferior access to market in state 1 is larger than for countries with superior access to markets. However, there are dramatic differences in the low part of the distribution. More than 40 % of more distant countries are in state 5 (more than 60 % if we consider states 4 and 5), but only 13 % of less distant countries would converge to state 5 (only 34 % to states 4 and 5). Then, it seems that distance by itself does not inhibit transitions to high export ratios, but on average more distant countries tend to be located in the very low part of the distribution.

The differences in the ergodic distribution are much more pronounced when considering differences in trade openness. Table 6 reveals that almost none of the “less” open countries converge to high export ratios. By contrast, about 40 % of more open countries would be located at state 1 (an more than 50 % in states 1 and 2). Most of less open countries tend to converge to low export ratios (60.1 % in state 1, and 85.7 % in states 1 and 2). Then, these results seem to suggest that more open trade policies are important for converging to high export ratios¹⁶.

4. Export Transitions: Within-Countries Evidence

¹⁶ As it is the case with all the other variables considered, these TPM’s and their ergodic distribution suggest some correlation with the long-run distribution of the export ratio, but they do not necessarily imply a causal relationship. Moreover, only a multivariate analysis may help to identify which correlations are robust once the impact of other variables is controlled for.

In the previous section, I have presented evidence of export transitions between extreme years. It is perfectly possible that countries for which there are not observations at the beginning of the period have also experienced substantial increase in exports¹⁷. Moreover, the comparison between end and final of the period year does not tell us anything about the timing of transitions, i.e., the year (or period) in which a country initiated a process of significant increment in its exports. By identifying this year, we can ask whether this timing coincides with discrete changes in policies and evaluate which variables may be responsible for this change. Moreover, even though a country is not experiencing a substantial change relative to the rest of the world, exports could increase respect to its own past performance.

In order to shed light on these issues, I study cases of within-country transitions. To do that, I identify cases where the export ratio increased significantly respect to recent performance. After identifying these transitions, I analyze the main stylized facts of this phenomenon. Using the very year of the transition, I use an event study methodology to compare the before and after evolution of several country-specific variables. I study in detail the behavior of a number of interesting variables such as per capita GDP, investment, total factor productivity, terms of trade, trade policy, macroeconomic distortions, etc¹⁸.

¹⁷ These are countries with no information on exports for the years 1960 through 1964. One notable example is China.

¹⁸ A similar methodology has been applied for studying the behavior of macroeconomic variables around episodes of external crises, such as current account reversals (Edwards, 2005b; Freund and Warnock, 2005), but to the best of my knowledge similar procedures has been not used in the context of significant increment in trade flows. Rodrik (1999) is an exceptional one on this regard, but he only studies the evolution of growth and investment.

Defining Transitions

Following Rodrik (2000) on his study on saving transitions, a country is defined to experience an export transition when there is significant increase in exports relative to its past performance. I make operational this concept by defining a year T as the beginning of transition whenever the three-year moving average of the exports-to-GDP ratio over a nine-year period starting at T exceeds by more than y percentage points the five-year average of its export ratio prior to T.

More formally, let X_T^3 the three-year moving average of the export ratio with year T as the first year of the average, and X_T^5 as the five-year moving average with year T as the terminal year of this average. Then, T is a transition year whenever¹⁹:

$$X_T^3 > X_T^5 + y \quad \text{for all } i=0,1,2,\dots,6$$

There are several parameters to be chosen for identifying the transition year. First, using three-and-five year moving averages for comparing the performance after and before the transition implies a horizon of nine years in which the evolution of the export ratio is analyzed. In such a case, n is equal to 6 in the condition defined above²⁰. Second, the “significant” difference in the export ratio given by y is also needed to be defined. A low value for y allows identifying more gradual transitions, and it would increase therefore the number of episodes. By contrast, larger values for y are useful to identify transitions that are more abrupt and exhibit a sharp break with past performance. To check how robust these results are and to illustrate the potential differences between

¹⁹ In order to focus on transitions where the saving ratio has increased significantly in absolute terms, Rodrik (2000) excludes transitions in which the saving rate after the transition remained less than 10 %. I do not see any reason to do the same in this case.

²⁰ I have tried with different specifications on this regard, and the results are mostly unchanged.

gradual and abrupt transitions I look at the transitions using two values for y : 5 and 10 percentage points.

The evolution of the export ratio for 10 years after and before an export transition is plotted in Figure 4. It can be appreciated how this simple methodology captures cases of significant changes in export performance. Before the year of transition (denoted by 0 in the figure), exports tend to decline slightly. After $T=0$, there is an increment in the export ratios, which stops approximately 5 years after the transition is initiated.

In Table 7 I show the incidence of export transitions for the two different thresholds used in defining transitions ($y=5, 7.5$ and 10), and for 5 groups of countries: Africa, Asia, Eastern Europe, Industrial, Latin America, and Middle East²¹. Overall, the incidence of transitions is a relatively low, varying between 100 and 35 cases, which represent 2.7 and 1.0 % of country-year observations, respectively. Obviously the higher percentage of transitions is found for cases where the threshold is the lowest one (Tran5). Overall, as it has been largely documents elsewhere, Asian countries are those with larger incidence of transitions. By contrast, African and Eastern Europe countries are those less likely to experience an export transition. However, Latin American countries, often characterized by protectionist trade regimes and macroeconomic instability, have also experienced a relevant number of export transitions. For the less demanding transitions (Tran5), countries in Latin America exhibit the second highest incidence of transitions (3.0 %), only being over performed by Asian countries with an incidence rate of 3.4 %.

In Figure 5 I show the incidence of export transitions over time. Overall, the incidence of export transitions does not show some trend overtime. It is likely to find a large incidence of export transitions not only at the beginning of the period, but also at

²¹ Hereinafter, I will denote both definitions of transitions for Tran5 and Tran10, respectively.

the end. For example, for Tran5, the incidence is the largest in 1965 with 8% of countries in that year starting an export transition. In 1973 and 1993, there is also a large incidence of transitions, with about 6 % of the countries initiating a period of significant increase in exports. There are some differences when considering Tran10. In such a case, transitions tend to be a more common phenomenon at the end of the period.

Some Stylized Facts

In this section, I am interested in investigating how several variables behave around an export transition. This is interesting because there are still controversies on what causes significant increase in exports, and what the probable consequences of these transitions are. Then, in the first part I concentrate the analysis on per capita GDP and investment rates, and imports. Second, I analyze the performance of policy related variables: real exchange rate overvaluation and trade policy. Third, I study the evolution of some other variables such as terms of trade, total factor productivity, and financial development. A more formal analysis is presented in Table 8 for Tran5, and Table 9 for Tran10. In these two Tables, I present the results obtained from estimating the following equation:

$$X_{it} = \alpha + \beta_1 D_{(T-5,T-1)} + \beta_2 D_{(T+1,T+5)} + \beta_3 D_{(T+6,T+10)} + \varepsilon_{it} \quad (4)$$

Where X is the variable under study, $D_{(T-5,T-1)}$ is a dummy variable for the five-year period before the year of transition, $D_{(T+1,T+5)}$ is a dummy variable for the first five-year period of the transition, and $D_{(T+6,T+10)}$ is a dummy variable for the second five-year

period of the transition. Then, the parameters β 's measure the average differences respect to the base period represented by the interval (T-10 and T-6). T is the transition year²².

In Figure 6 I plot the evolution of per capita GDP around episodes of export transition. There are three main issues in this figure. First, it seems that countries experiencing more strong export transitions are those with larger per capita GDP that those initiating transitions with a less demanding threshold of 5 percentage points. Note that average income before the transition year is around 4,000 dollars for Tran5 and more than 5,000 dollars for Tran10. Second, yet there are some fluctuations in per capita GDP, there is not a clear trend in terms that export transitions are initiated or accompanied by increases or reductions in income. Third, the evidence suggests that per capita GDP tend to grow after the transition starts. However, the results in Tables 8 and 9 show that, in general, differences relative to the base period are not significant. The only significant difference is found when per capita GDP is measured in logs instead of the level. In such a case, during the second five-year period of the transition the per capita GDP is about 19 % higher than in the base period. I do not find evidence, however, of this significant difference for transitions using a threshold of 10 percentage points.

In Figure 7 the event study for investment rates is presented. The evolution seems to be highly volatile, but it has to be noted that this is result of the y-axis scale. For Tran5 the investment ratio moves between 23 % –ten years before a transition is initiated – and slightly above 25 % ten years after the transition year. For Tran10, the fluctuations tend to be more pronounced, but they are still in the range of 22% and 26 %. Then, there is not clear evidence that export transitions would be initiated by increases in investment, and I

²² All these regression are estimated by OLS with robust standard errors clustered by country. The only exception is the variable openness that because it is a dummy, I estimate a Probit model. In such a case, the marginal effects are presented.

do not find evidence that export transitions are accompanied by significant increments in the investment ratio. This is confirmed in Tables 8 and 9, where it can be appreciated that none of the β 's coefficients are statistically different from zero.

These results, for a larger sample of countries, contrasts with the hypothesis of Rodrik (1997), where he argues that most of the huge increment in exports for some Asian countries was due to changes in investment incentives that accelerated investment ratio and imports, and consequently had a positive impact on exports. I find that, on average, this may be not a relevant mechanism for understanding export transitions. Moreover, as I show in Figure 8, the behavior of the imports ratio is at odds with this hypothesis. It is true that for Tran5, there is some increment in first five years of the period (in the interval -10 to -6), but during the 5-year period right before a transitions is initiated the imports ratio is very stable. Moreover, for Tran10 there is a reduction in the imports ratio before the transitions is initiated. The estimations presented in Tables 8 and 9 reveal that the import ratio is significantly higher only after an export transition is initiated.

In terms of trade policy, I do not find evidence that countries have reduced trade barriers before the starting of a transition. Not at least in the trade openness variable used in this paper. Figure 9 shows a flat behavior for this variable in the ten-year period before the transition. By contrast, this figure shows evidence that during the transition there is an increment in the percentage of countries classified as open. This is entirely confirmed in the Probit regressions show in Tables 8 and 9. For both types of transitions, the coefficients are positive and significant for the both five-year periods after the transitions starts. In fact, these parameters imply that the probability of becoming an open country increases by between 20 and 30 % only after the export transition starts.

In Figure 10 the event study for real exchange overvaluation is shown²³. For both types of transitions, it can be appreciated that, before the transition, there is an increase the degree of overvaluation. After the initial year of transition, countries tend to reduce exchange rate distortions. Overall, the evidence in Tables 8 and 9 seems to suggest that the starting of export transitions is not previously accompanied for a reduction in real exchange rate distortions, and that the degree of overvaluation is only reduced only after the beginning of a transition. This is, however, mainly found when this variable is measured in logs. The first five-year period of the transition are related to a reduction of approximately 13 and 20 %, and the second five-year period to a decreasing of between 10 and 17 %.

One potential explanation for the existence of export transitions is the existence of favorable terms of trade shocks. This hypothesis is, however, not confirmed. As it can be appreciated in Figure 11, there is declining trade in terms of trade in the period right before the transition starts. During the transition, the terms of trade tend to remain mainly constant. In any case, as it is shown in Tables 8 and 9, the terms of trade during the transition are approximately 14% lower compared to the base period for Tran5, and between 10% and 11 % for Tran10. In sum, the evidence is not consistent with the idea that positive terms of trade shocks may act as catalyst for export transitions. Neither it is with the idea that export expansions are associated with a significant deterioration of the terms of trade.

Are export transitions significantly associated with increases in productivity?. The evidence in Figure 12 shows some differences in the behavior of total factor productivity

²³ This variable is taken from the Global Development Network Growth Database, and it is computed using the procedure described in Dollar (1992).

around export transitions²⁴. For Tran5 there is an increase in TFP before the transition year, and productivity tends to grow vigorously during the export expansion. After some time, there is a reduction in TFP. For transitions with a larger threshold ($y=10$), the year of transition is preceded by a decreasing productivity. Similarly to the first type of transitions, the export expansion is accompanied by a strong increase in TFP, which it seems to be reversed after some period. Table 8 shows that for Tran5, compared to the base period, TFP increase by 5.7 and 9.8 per cent during the occurrence of a transition. For Tran10, even the increase is positive (6.4 and 9.7 %), it is only significant at 10% for the second five-year period. In sum, the evidence suggests that export transitions are not preceded by a strong increase in productivity. What this evidence shows is that once a transition is initiated, TFP tends to grow significantly.

Finally, in Figure 13 I analyze how financial development is associated with export transitions²⁵. For both transitions, the evidence shows a previous strong improvement in financial development. Results in Tables 8 and 9 show that, comparing with the base period, domestic credit provided by banking sector increases between 7.5 and 11.9 percentage points in the five-year period before the transition year. For the first type of transition, domestic credit tends to be stabilized, but to a higher level than the base period (approximately 9 percentage points above). For the second type of transition, domestic credit tend to decrease after the transition year, and although the parameters for the two periods after the transition year are positive only it is significant at 10 % for the second-

²⁴ Total factor productivity used in this paper has been computed by Bosworth and Collins (2003) using a growth accounting procedure.

²⁵ I use domestic credit provided by banking sector (percentage of GDP) as proxy of financial development. The evidence is similar when using other proxy for financial development, such as domestic credit provided by banking sector (percentage of GDP).

two year period. Then, this evidence seems to be consistent with the idea that financial development tend to increase trade flows. For both transitions, an increase in domestic credit provided by banking sector precedes the export expansion²⁶.

5. Conclusions

Using a large dataset of countries during the last forty years, this papers explores empirically how common are export transitions. Motivated by the extraordinary export performance of some East Asian countries, most of the literature has focused on whether export expansion is positively associated to economic growth. Less empirical work has been done to identify the main stylized facts associated to export expansions.

In the first part of this paper, I have studied in detail how countries change their relative position in terms of export performance. The evidence shows that transitions are a quite rare phenomenon. The relative position of the countries tends to be highly persistent. Compared to the beginning of the 60's, only eight countries –mostly Asian countries - have been able to transit to larger export ratios. My results show that trade policy, quality of institutions, access to markets, and factors endowments may be responsible for the divergent experiences in export performance around the world.

In the second part of the paper, rather than comparing countries with each other, I study how countries are able to increase their exports and divert from their own past performance. The incidence of these transitions tends to be larger, but it is still the case that they are a rare phenomenon. Using the within-country variation in the export ratio, I identify some interesting stylized facts. First, on average, I do not find that the

²⁶ It has to be noted that causality issues are more complicated. There is evidence that also trade expansion may induce financial development.

mechanisms identified by Rodrik (1997) for explaining export transitions in some of the East Asian countries are prevalent in a large sample of countries. Export expansions have a very weak relationship with investment and imports.

Second, several of the variables commonly offered as explanations for export expansions are shown to be no relevant to drive an export transition. The analysis in this paper suggests that export transitions are not preceded by a reduction in protectionist policies, neither a decrease in real exchange overvaluation. The evidence is similar for positive external shocks and increases in total factor productivity. In fact, I find that in the years previous to a transition, terms of trade tend to deteriorate and productivity does not increase significantly. Finally, my results show that export transitions may be potentially driven by improvements in financial development. It is shown that increase in domestic credit tend to precede export transitions rather than in the way around. Naturally, this evidence has to be pondered by the fact that my analysis is not intended to show causality between export transitions and the variables under study. In spite of this, I think this paper reveals some interesting stylized facts that deserve a deeper analysis.

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Table 1: Exports to GDP

Year	Countries	Mean	Std. Dev.	Min	Max
1960	90	24.8	17.0	3.2	93.2
1970	109	26.6	19.0	1.8	95.6
1980	135	34.8	22.4	5.1	124.1
1990	166	34.3	24.8	2.5	184.1
2001	150	42.0	27.9	6.5	173.6

Source: World Development Indicators (2001)

Table 2: Short-Term Transitions

<i>State in t</i>	<i>State in t+1</i>					
	1	2	3	4	5	n
1	80.7	18.2	0.6	0.6	0.0	181
2	12.9	66.3	16.9	3.4	0.6	178
3	1.7	15.0	63.3	18.3	1.7	180
4	1.1	0.0	17.8	63.9	17.2	180
5	0.0	0.0	2.9	17.3	79.8	173
n	174	178	182	185	173	892

Table 3: Medium-Term Transitions

<i>State in t</i>	<i>State in t+4</i>					
	1	2	3	4	5	n
1	58.3	29.8	7.1	3.6	1.2	84
2	21.6	38.6	22.7	13.6	3.4	88
3	0.0	18.4	49.4	27.6	4.6	87
4	1.2	8.2	24.7	37.7	28.2	85
5	0.0	1.2	3.7	34.2	61.0	82
n	69	83	93	99	82	426

Table 4: Long-Term Export Transitions

<i>State in 1960-1965</i>	<i>State in 1995-2001</i>					
	1	2	3	4	5	n
1	65.0	10.0	15.0	10.0	0.0	20
2	15.8	26.3	26.3	15.8	15.8	19
3	0.0	31.6	26.3	26.3	15.8	19
4	5.6	11.1	22.2	33.3	27.8	18
5	0.0	5.6	22.2	16.7	55.6	18
n	17	16	21	19	21	94

Table 5: Countries with Interesting Export Transitions

<i>Country</i>	<i>Region</i>	<i>Exports to GDP</i>		<i>Variation</i>
		<i>1960-64</i>	<i>1995-01</i>	
<i>Transitions-Up</i>				
Nigeria	Africa	8.9	44.1	35.1
Indonesia	Asia	11.1	36.0	24.9
Korea, Rep.	Asia	4.8	39.2	34.4
Philippines	Asia	13.9	47.9	33.9
Papua New Guinea	Asia	17.0	51.8	34.8
Thailand	Asia	15.9	54.2	38.3
Chile	Latin America	12.5	29.3	16.9
Mexico	Latin America	8.3	30.4	22.2
<i>Average</i>		<i>11.5</i>	<i>41.6</i>	<i>30.1</i>
<i>Transitions-Down</i>				
Central African Republic	Africa	25.6	15.8	-9.8
Kenya	Africa	32.3	28.0	-4.2
Libya	Africa	45.5	27.2	-18.2
Sierra Leone	Africa	29.1	15.8	-13.3
South Africa	Africa	29.8	25.7	-4.1
Uganda	Africa	26.8	11.7	-15.1
Zambia	Africa	55.0	27.8	-27.2
Myanmar	Asia	18.4	0.8	-17.6
Sri Lanka	Asia	39.7	36.5	-3.2
Iceland	Industrial	40.4	36.5	-3.9
Peru	Latin America	20.1	14.2	-5.9
Venezuela, RB	Latin America	28.1	26.4	-1.7
Egypt, Arab Rep.	Middle East	18.2	18.3	0.1
Saudi Arabia	Middle East	55.5	39.1	-16.4
<i>Average</i>		<i>33.2</i>	<i>23.1</i>	<i>-10.0</i>

Table 6: Ergodic Distributions

<i>Variable</i>	<i>States</i>						
	(1)	(2)	(3)	(4)	(5)	(1)+(2)	(4)+(5)
Institutional Quality							
Low	7.1	17.5	22.6	17.9	34.9	24.6	52.8
High	25.1	23.9	26.3	20.2	4.5	49.0	24.7
Natural Resources Intensity							
High	0.4	23.6	30.9	22.4	22.8	24.0	45.1
Low	19.0	16.3	14.5	16.3	33.9	35.3	50.2
Access to GDP							
Low	11.2	8.5	17.4	22.1	40.7	19.8	62.8
High	8.3	26.0	31.7	20.3	13.7	34.3	34.0
Trade Openness							
Low	0.1	9.5	4.7	25.6	60.1	9.6	85.7
High	37.5	13.9	22.7	16.2	9.7	51.4	25.9

Table 7: Incidence of Transitions by Region

<i>Region</i>	<i>Tran5</i>	<i>Tran10</i>
Africa	31	6
	2.6	0.5
Asia	19	11
	3.4	2.0
Eastern Europe	3	2
	1.7	1.2
Industrial	14	5
	2.1	0.7
Latin America	25	7
	3.0	0.8
Middle East	8	4
	2.9	1.5
Total	100	35
	2.7	0.9

Table 8: Economic Variables around Export Transition, Tran5

	<i>Investment Rate</i>	<i>Per Capita GDP</i>	<i>Per Capita GDP (in logs)</i>	<i>Imports (%GDP)</i>	<i>Open</i>	<i>RER Overvaluation</i>	<i>RER Overvaluation (in logs)</i>	<i>Terms of Trade (in logs)</i>	<i>TFP (in logs)</i>	<i>Banking Credit (% GDP)</i>
(t-5, t-1)	-0.451 (0.75)	88.537 (0.19)	0.029 (0.32)	1.836 (1.15)	0.025 (0.63)	28.832 (2.20)*	0.085 (2.46)*	-0.068 (3.00)**	0.015 (0.64)	7.485 (2.78)**
(t+1, t+5)	-0.837 (1.40)	446.405 (0.96)	0.130 (1.42)	8.875 (5.47)**	0.195 (4.84)**	-11.437 (0.87)	-0.133 (3.85)**	-0.140 (6.05)**	0.057 (2.37)*	9.709 (3.63)**
(t+6, t+10)	0.973 (1.60)	681.980 (1.44)	0.189 (2.00)*	11.429 (6.85)**	0.312 (7.57)**	-10.848 (0.78)	-0.101 (2.76)**	-0.136 (5.54)**	0.098 (3.91)**	9.349 (3.40)**
Constant	22.642 (50.48)**	3,838.914 (11.40)**	7.302 (109.14)**	37.163 (31.12)**	-- --	119.221 (12.47)**	4.709 (187.17)**	4.777 (284.56)**	0.157 (9.36)**	37.268 (18.70)**
Observations	1507	1732	1732	1732	1240	1219	1219	1362	1001	1560
R-squared	0.01	0.00	0.00	0.04	--	0.01	0.04	0.03	0.02	0.01

Absolute value of t statistics in parentheses * significant at 5%; ** significant at 1%

Table 9: Economic Variables around Export Transition, Tran10

	<i>Investment Rate</i>	<i>Per Capita GDP</i>	<i>Per Capita GDP (in logs)</i>	<i>Imports (%GDP)</i>	<i>Open</i>	<i>RER Overvaluation</i>	<i>RER Overvaluation (in logs)</i>	<i>Terms of Trade (in logs)</i>	<i>TFP (in logs)</i>	<i>Banking Credit (% GDP)</i>
(t-5, t-1)	0.552 (0.56)	-516.904 (0.54)	-0.089 (0.57)	-0.891 (0.31)	0.006 (0.11)	20.147 (2.27)*	0.106 (1.79)	-0.109 (2.79)**	-0.012 (0.24)	11.947 (2.03)*
(t+1, t+5)	-0.862 (0.88)	42.241 (0.04)	0.057 (0.36)	9.607 (3.31)**	0.201 (3.74)**	-18.503 (2.13)*	-0.199 (3.43)**	-0.118 (2.99)**	0.064 (1.23)	5.869 (1.05)
(t+6, t+10)	1.160 (1.18)	414.801 (0.43)	0.103 (0.65)	13.492 (4.56)**	0.224 (4.08)**	-18.134 (2.01)*	-0.173 (2.87)**	-0.101 (2.42)*	0.097 (1.83)	9.679 (1.71)
Constant	23.961 (34.71)**	5,826.402 (8.57)**	7.651 (68.75)**	48.947 (23.66)**	--	115.158 (18.85)**	4.674 (114.43)**	4.740 (169.74)**	0.166 (4.74)**	46.216 (11.24)**
Observations	621	665	665	672	389	371	371	445	288	539
R-squared	0.01	0.00	0.00	0.05	--	0.06	0.09	0.03	0.02	0.01

Absolute value of t statistics in parentheses * significant at 5%; ** significant at 1%

Figure 1: World Average Export-to-GDP, 1960-2001

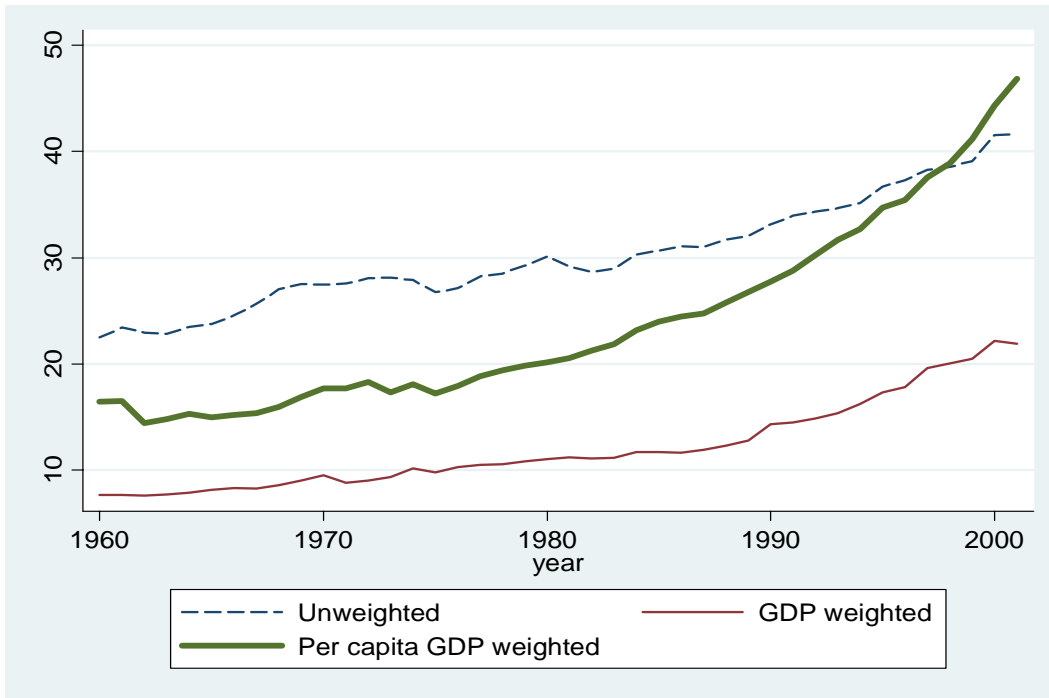


Figure 2: Export-to-GDP by Regions, 1960-2001

(Simple Average)

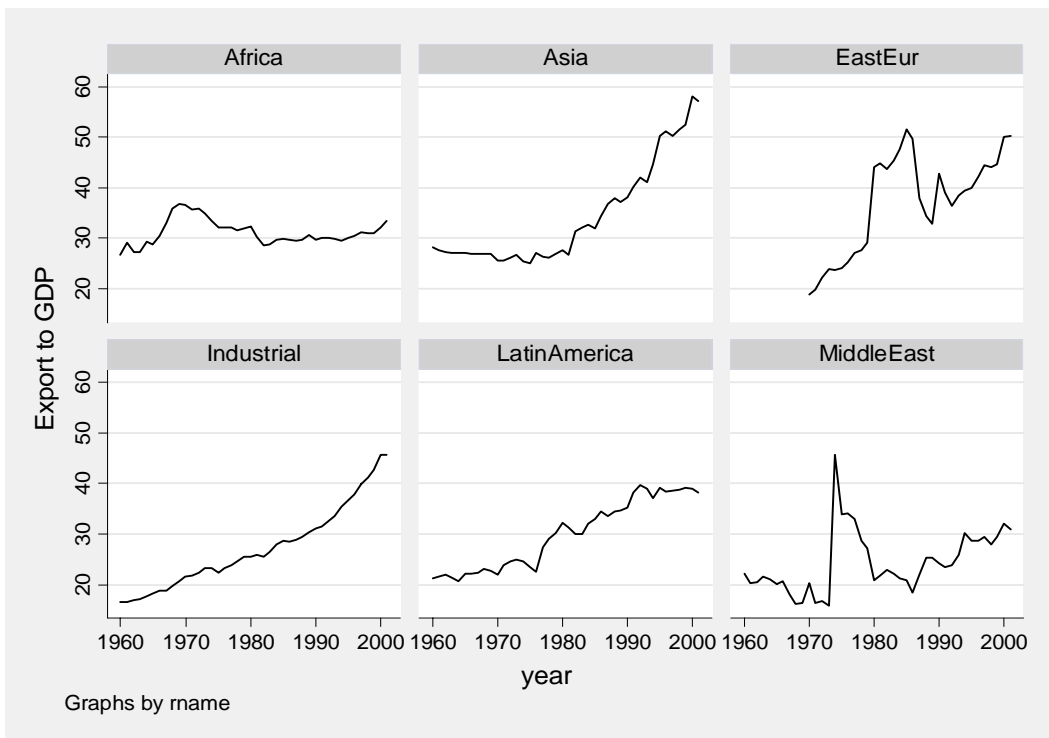


Figure 3 Export-to-GDP, 1960-2001
(Selected Countries)

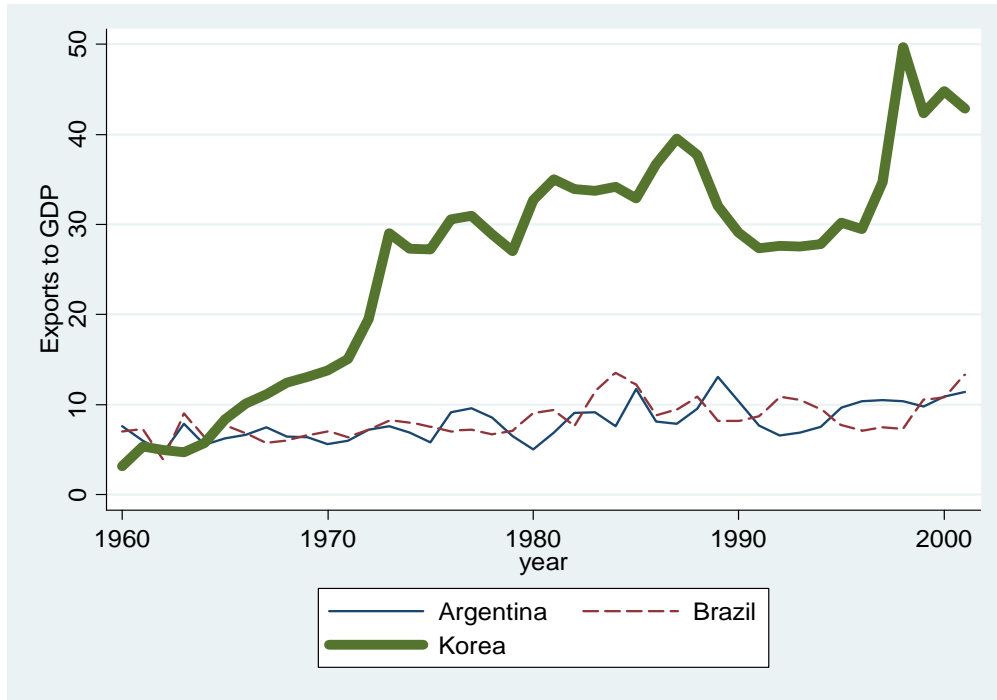


Figure 4: Export Transitions

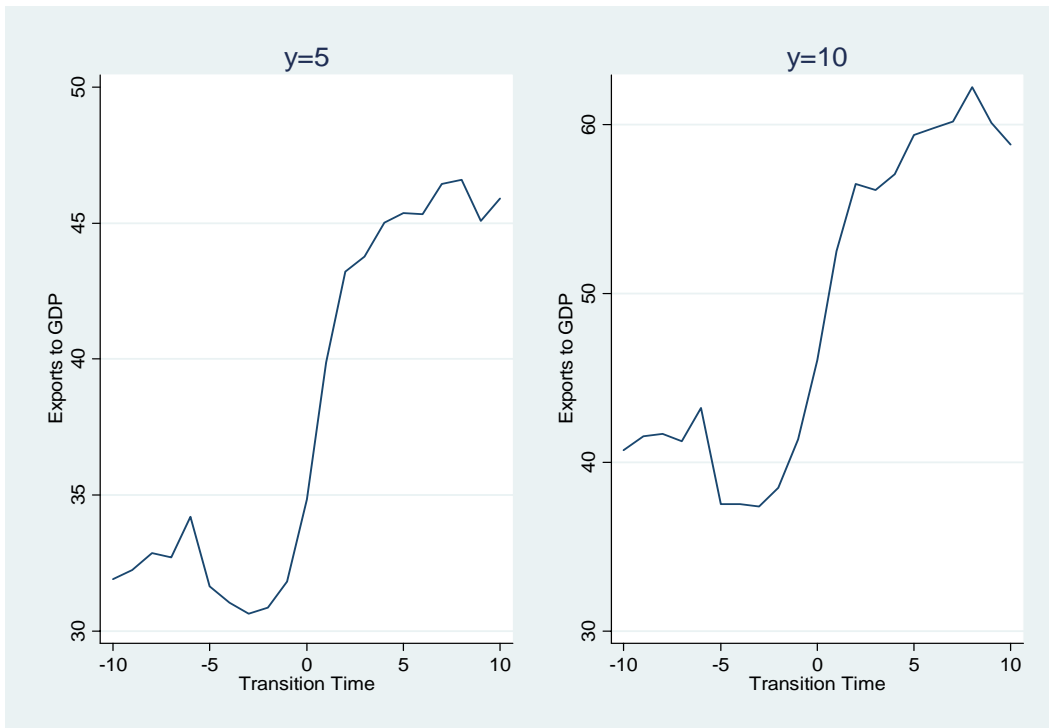
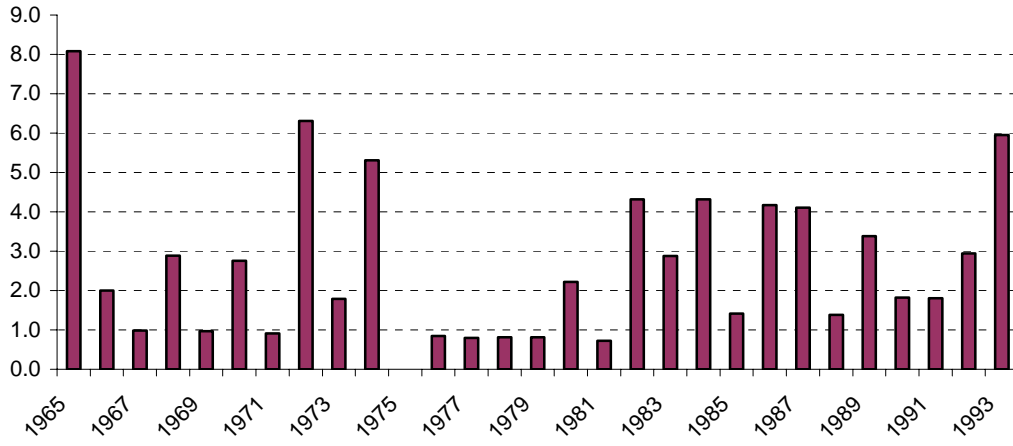


Figure 5: Incidence of Export Transitions over Time

y=5



y=10

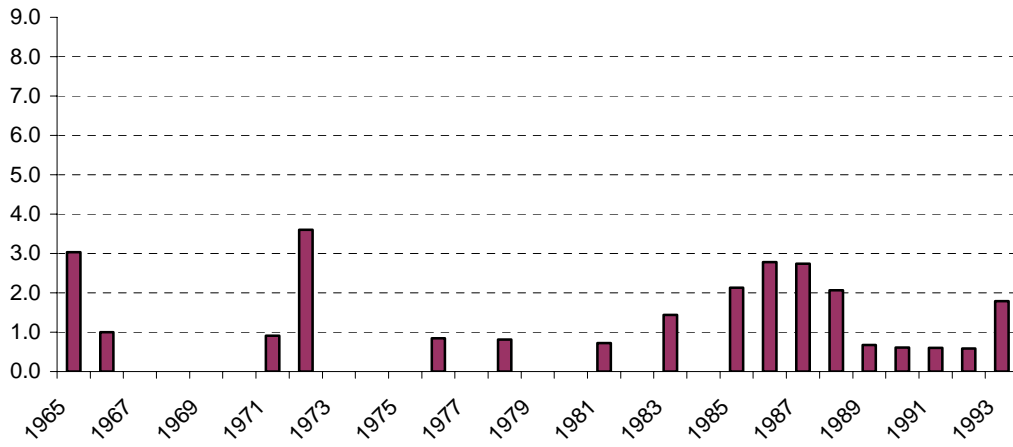


Figure 6: Export Transitions and Per Capita GDP

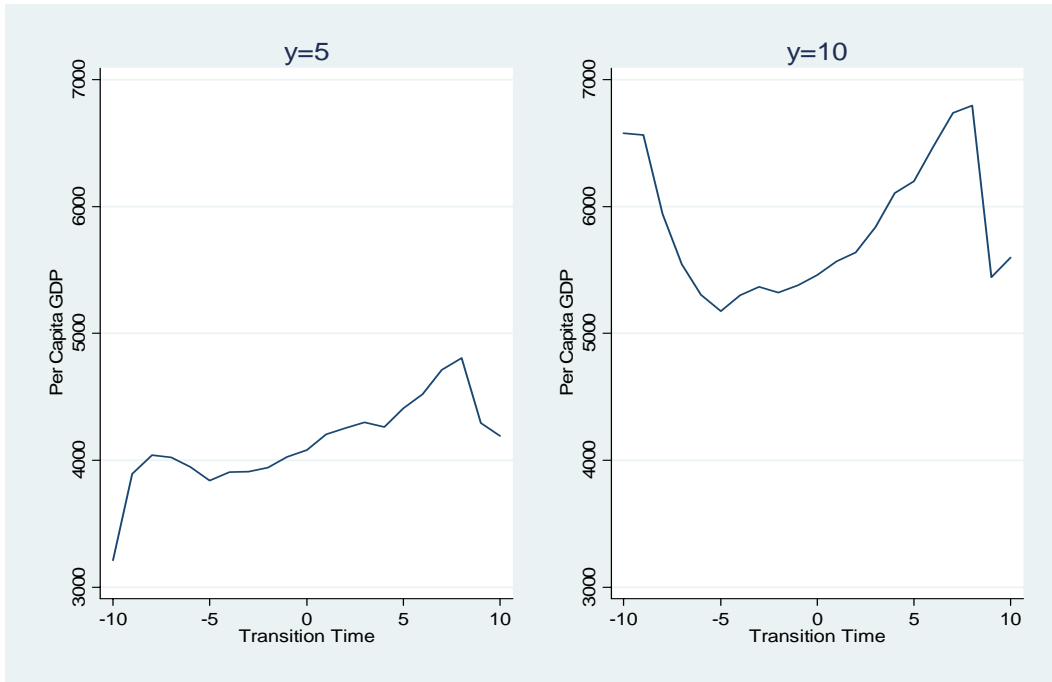


Figure 7: Export Transitions and Investment Rate

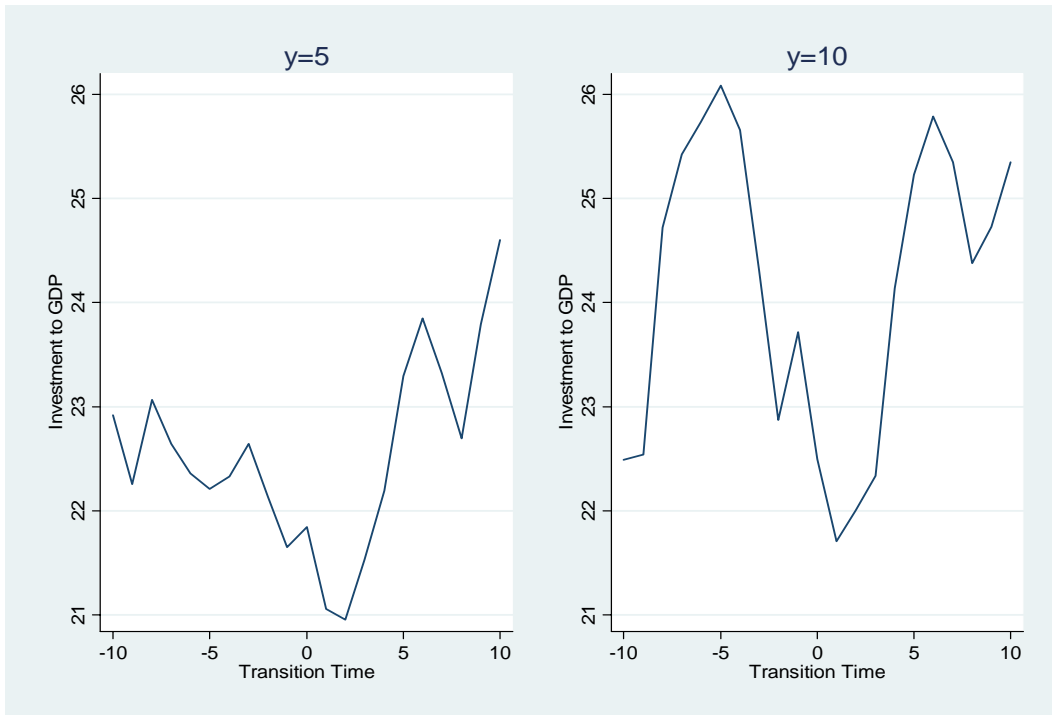


Figure 8: Export Transitions and Imports Ratio

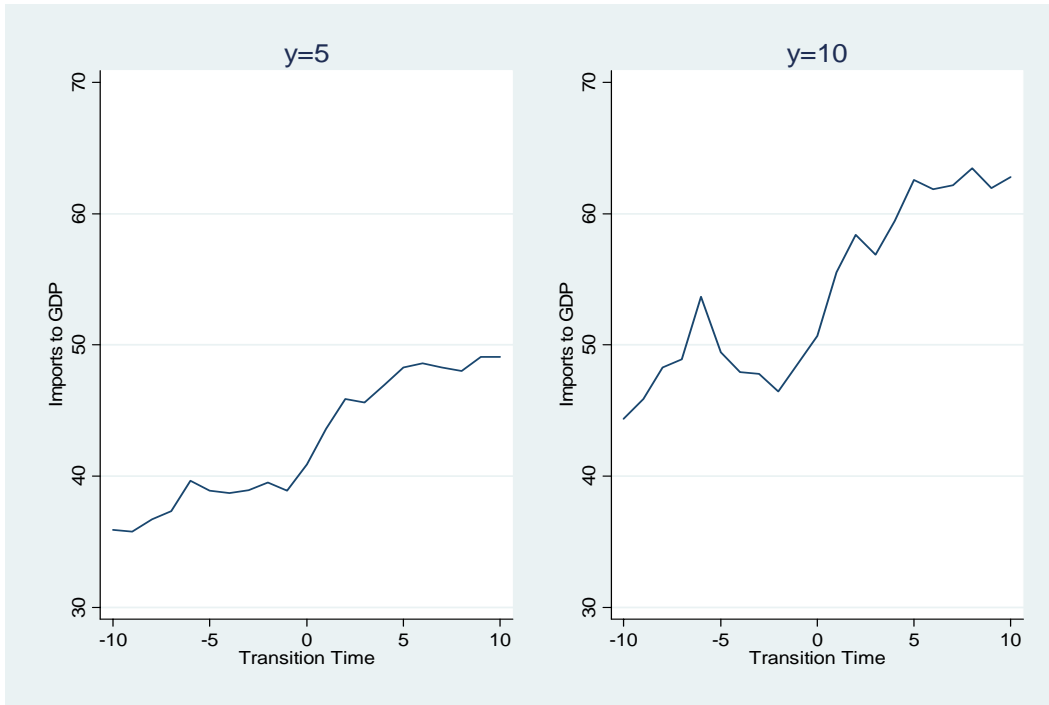


Figure 9: Export Transitions and Trade Openness

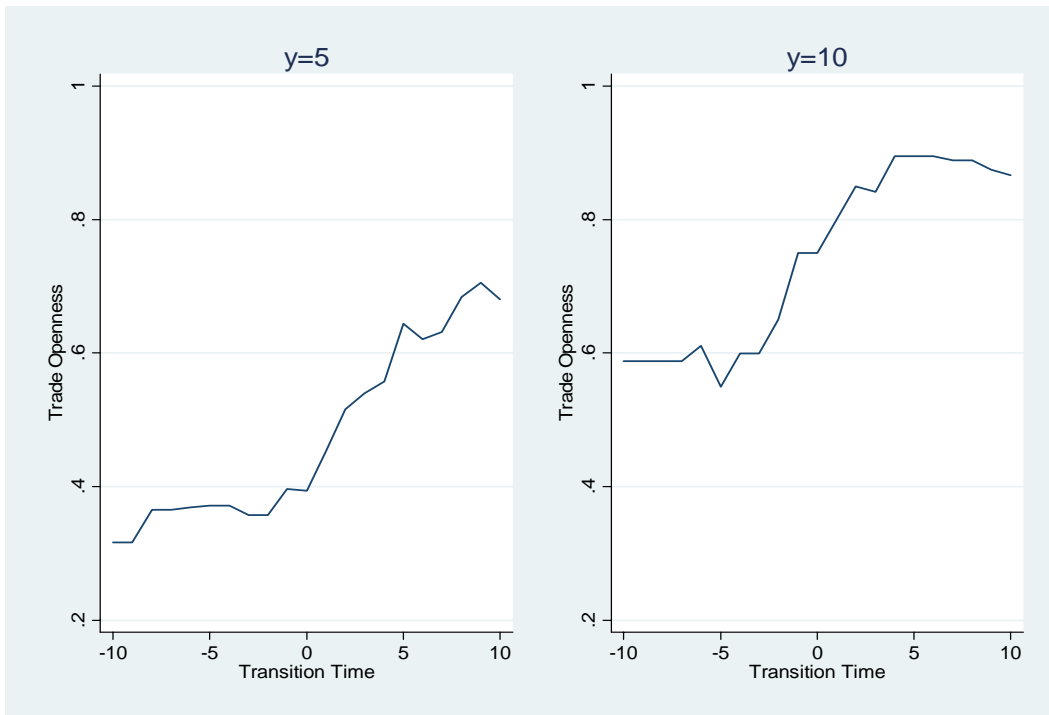


Figure 10: Export Transitions and Real Exchange Rate Overvaluation

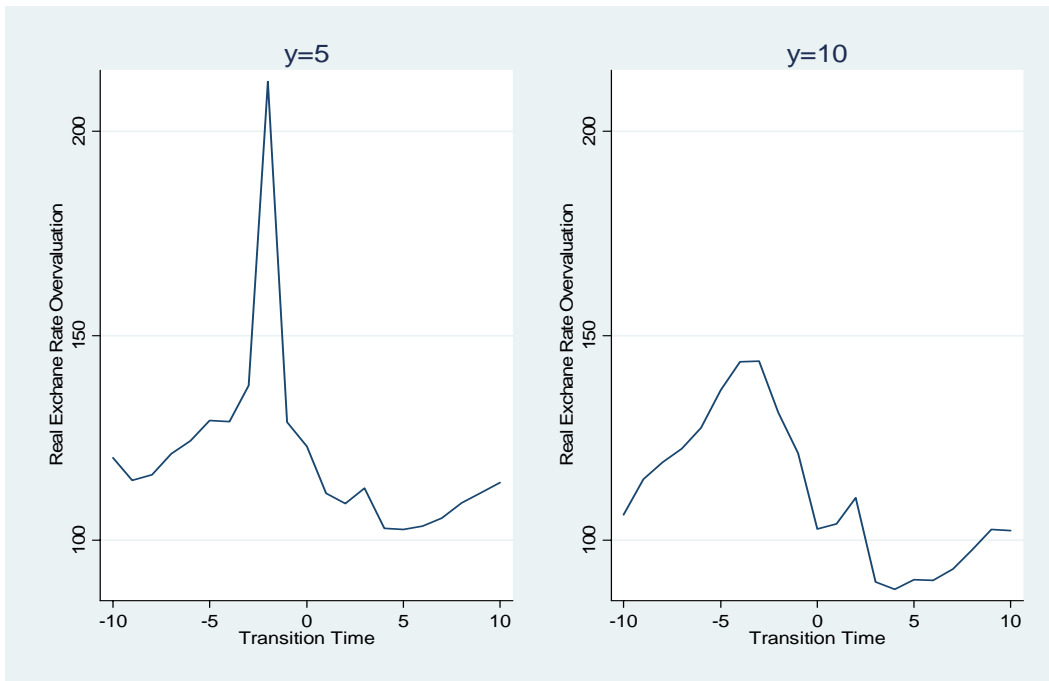


Figure 11: Export Transitions and Terms of Trade

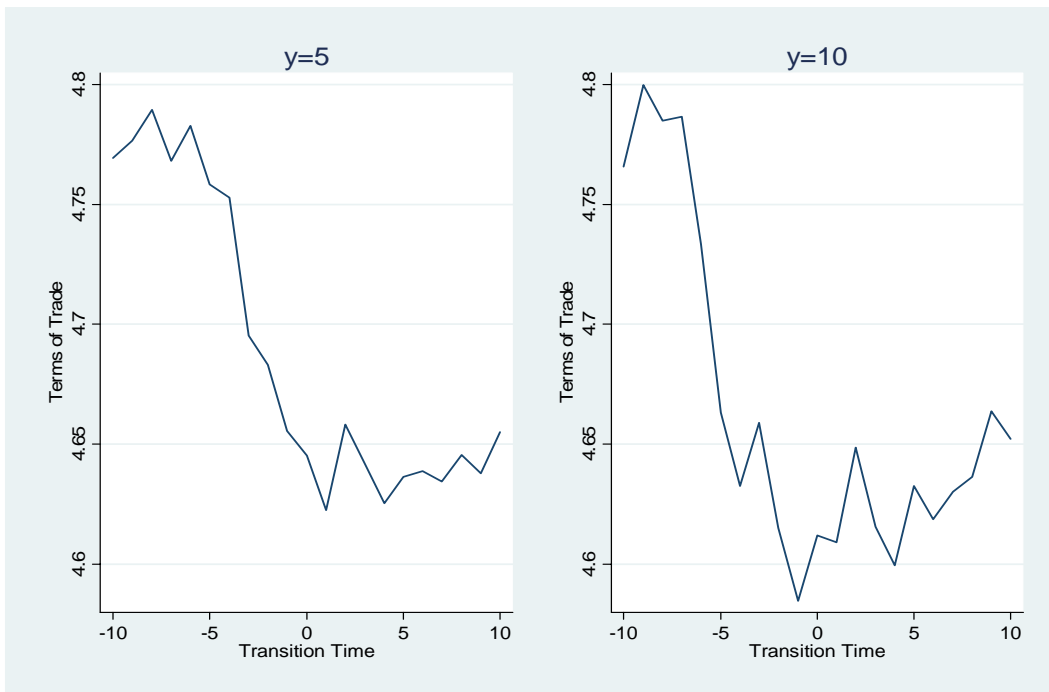


Figure 12: Export Transitions and Total Factor Productivity

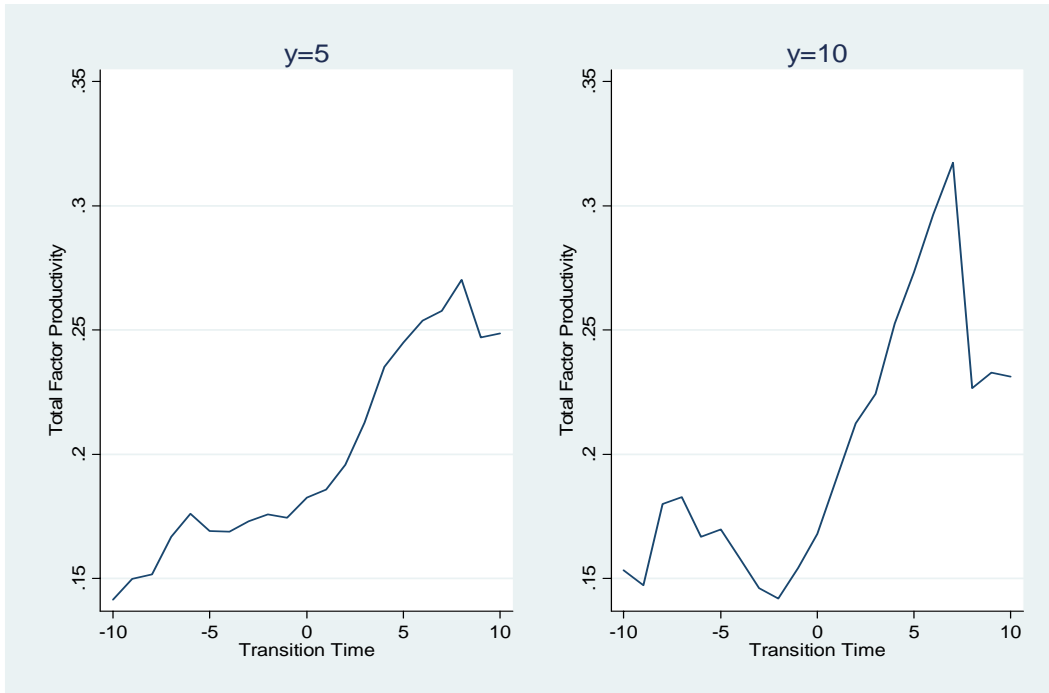
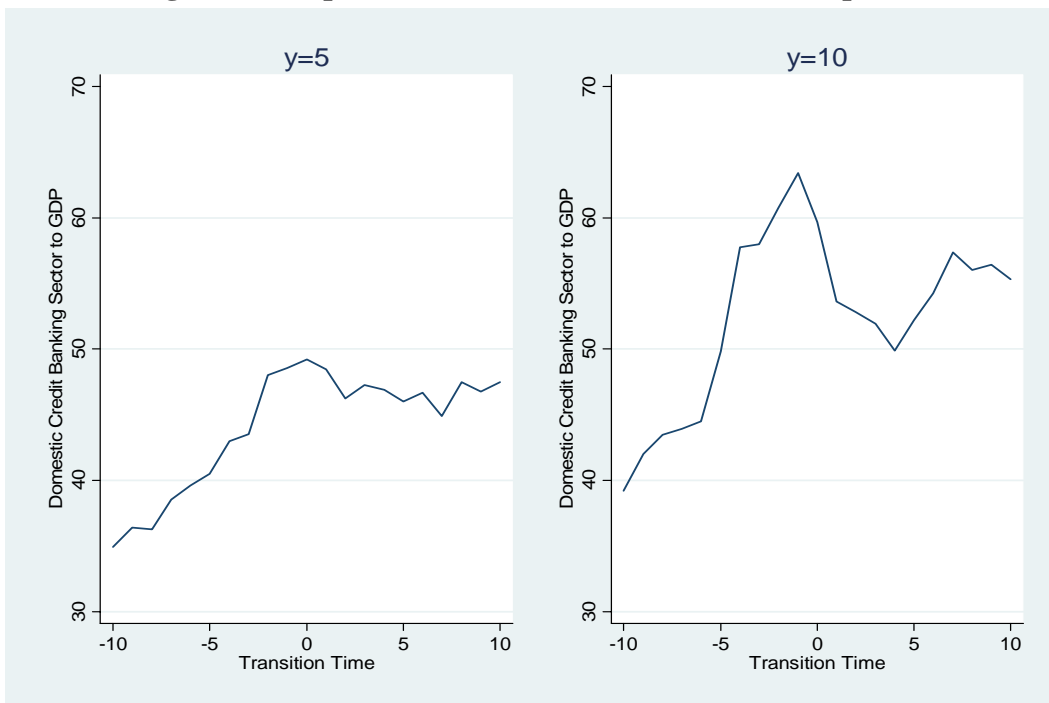


Figure 13: Export Transitions and Financial Development



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