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**What difference does it make (when a middle-income country is caught in the trap)? An evidence-based survey analysis of the determinants of Middle-Income Traps**

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**What difference does it make? Revue de littérature et analyse empirique des déterminants de la Trappe à Revenu Intermédiaire**

**Résumé**

*Les gouvernements des pays en développement et les institutions internationales s'intéressent de plus en plus à la Trappe à Revenu Intermédiaire (TRI). Cet article utilise une approche mixte pour identifier des épisodes de TRI dans un échantillon de 132 pays de 1970 à 2010, puis teste empiriquement trois groupes de facteurs explicatifs proposés par la littérature : les régimes de croissance et d'accumulation, la transformation du commerce et des structures productives et les conflits de répartition. Les résultats montrent que le dividende démographique, les modèles de diversification et de changement productif, le mauvais appariement sur le marché du travail, et les conflits expliquent pourquoi certains pays à revenu intermédiaire connaissent des ralentissements durables de la croissance. Au contraire, des explications aussi souvent évoquées que l'accumulation de capital physique et humain, la démocratie, les inégalités et la redistribution ne permettent pas de distinguer les pays dans la trappe de ceux qui ne le sont pas. Nous avons également identifié des effets cumulatifs. En effet, l'insuffisance des capacités d'emploi et d'innovation atténue l'effet positif du capital humain et de la force de travail sur la croissance à moyen-terme des pays dans la trappe.*

**Mots-clés :** Trappe de Revenu Intermédiaire ; Transitions de croissance ; Déterminants de la croissance de moyen terme ; ralentissement économique ;

**What difference does it make (when a middle-income country is caught in the trap)? An evidence-based survey analysis of the determinants of Middle-Income Traps**

**Abstract**

*Middle-Income Trap (MIT) is a growing concern for developing countries' governments and development banks. This paper uses a mixed approach to identify episodes of MIT in a panel of 132 countries over 1970-2010 and tests empirically three groups of explaining factors advanced by the recent literature on this issue: growth and accumulation regimes, transformation of trade and productive structures and distributional conflicts. We find that the demographic dividend, the patterns of productive change and diversification, skill misallocation, and conflicts help explain why some middle countries underwent persistent growth slowdowns. On the contrary, such frequently evoked explanations as physical and human capital accumulation, democracy, inequality and redistribution did not help differentiating between the middle-income countries caught in the trap and the others. Cumulative effects are also identified since the weakness of employment and innovation capacities dampens the positive effect of human capital and workforce on medium-run growth.*

**Keywords:** Middle-Income Trap, Growth Transitions, Growth Determinants, Growth Slowdown

**JEL:** C33, O40, O54

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## 1. Introduction

Owing to sustained economic growth, many developing countries were able to reach the middle-income category during the last decades<sup>1</sup>. However, as they had to face lingering growth slowdown ever since, most of these middle-income countries failed to catch up with the higher income countries. Only 13 of the 101 countries classified as middle-income economies in 1960<sup>2</sup> had reached higher income group five decades later, with successful transitions being mainly located in Europe and East Asia (World Bank, 2012). Although deeply heterogeneous, middle-income countries have generally achieved significant economic and social progress in terms of health, education and poverty reduction. They also have succeeded in developing a relatively diversified industrial base, rising agricultural productivity and integrating their economies to global markets.

Still, most middle-income countries also have to deal with enduring handicaps, like the persistence of weakly productive and informal activities or limited access to finance, while also facing new difficulties, like declining competitiveness in labor-intensive industries, unsuitable governance hindering innovation and growing inequality. Over the past two decades, these various difficulties have become so pervasive among middle-income economies that they came out to be described as symptoms of Middle-Income Traps (hereafter MITs) (Gill and Kharas, 2007, Agénor, 2017). Today, China, Malaysia and Thailand are regularly mentioned as typical examples of countries that have experienced a growth slowdown and may feature a variety of symptoms suggesting that they could be stuck into a middle-income trap (Flaen et al, 2007; Woo, 2009; Eichengreen et al, 2011; Fang, 2012; Jimenez et al, 2012; Lin and Treichel, 2012; Kanchoochat and Intarakumnerd, 2014, Alias et al, 2014). Although no shared definition or theory of the MIT has emerged, it can be loosely described as “*situations where a growth slowdown results from bad policies (...) that prove difficult to change in the short-run*” (Gill and Kharas, 2015: 6).

In its simplest form, the MIT suggests that the GDP growth of a middle-income country has remained below its potential for a long time. However, this leaves open the question as to how to define both the potential level and the long period. A more sophisticated characterization would describe MIT as a stable equilibrium typical of middle-income countries featuring slow growth and structural change. However, here again, theorization faces various difficulties that will be exposed below in the paper. So far, the most common method to identify MITs has consisted in identifying its main symptom, an episode of GDP growth or productivity slowdown (Daude and Fernandez-Arias, 2010; Eichengreen et al., 2012; Aiyar et al., 2013). Rather than defining the MIT as a low-level stable equilibrium, akin to the poverty trap, this method relies on an operational definition of MITs as *a deterministic medium-run growth slowdown episode, out of the predictable trajectory that would be driven by a convergence or catch-up process*. With this definition in mind, two main approaches can be found in the recent literature.

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<sup>1</sup> The World Bank classifies countries in lower, middle-income and higher income on the basis of gross national income per capita at current prices. In order for this income classification to reflect both monetary and non-monetary characteristics of well-being, the World Bank examines the relationship between measures of well-being, including the impact of poverty and child mortality, and GNI per capita.

<sup>2</sup> Equatorial Guinea, Greece, Hong Kong, China, Ireland, Israel, Japan, Mauritius, Portugal, Puerto Rico, South Korea, Singapore, Spain and Taiwan.

A *first approach* has consisted in addressing relative and absolute income divergence<sup>3</sup> in a standard growth convergence framework by focusing on medium-run growth. Under the assumption that the evolution of GDP per capita in developing countries does not follow a single trend but has a stronger instability than in developed countries, structural breaks in GDP time series are identified that draw breakdowns, slowdowns or accelerations spells. Rodrik (1999) analyzes changes in growth rates over time, and identifies heterogeneous patterns of growth slowdown in developing countries after a common break in 1975. Pritchett (2000) ranks growth episodes into "hills" (steady growth), "plateaus" (strong growth followed by stagnation), "mountains" (rapid growth followed by a decline), "cliffs" (rapid decline), "plains" (continuous stagnation) and "valleys" (regular steady decline). If the "plains", *i.e.* the countries having experienced an average growth rate below 1.5% either before or after their structural break, reflect the situation of low income countries retained in the poverty trap, the "plateaus", *i.e.* the countries that had an average growth rate over 1.5% before the structural break but less than 1.5% thereafter, are more akin to the MIT<sup>4</sup>. Reddy and Minoiu (2007) find that the number and depth of growth stagnation episodes increased during the 1970s and the 1980s, before decreasing during the 1990s<sup>5</sup>. More importantly, they also show that the probability of becoming a stagnating economy is higher for the countries that were already stagnating during the previous decades, this result pointing to a possible hysteresis through which past episodes of stagnation might increase the country's vulnerability to future episodes of stagnation.

Then, various structural determinants were econometrically investigated in order to explain these medium run growth acceleration or slowdown spells<sup>6</sup>. In Hausmann *et al.* (2006), the probability of growth acceleration increases with political regime change, while it is not impacted by economic reforms. Reddy and Minoiu (2007) find that the probability of stagnation is higher for the countries located in regions (including Latin America and Sub-Saharan Africa), having experienced more conflicts and more dependent on primary goods exports. More recently, Berg *et al.* (2012) find that trade liberalization, competitive exchange rates, export sophistication, current account surpluses, substantial foreign investment and less income inequality increase the duration of accelerated growth spells.

It is worth emphasizing that this purely "empirical" approach has been criticized on various grounds. Although Berg *et al.* (2012) insisted that, because episodes of growth slowdown potentially come from a large variety of cumulative shocks like external crises, civil conflicts, structural bottlenecks or poor governance, that may be mutually self-reinforcing, the determinants of MITs should be analyzed as systems. Still, researchers have tended to keep on trying to isolate a single mechanism as being responsible for the inability to

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<sup>3</sup> On the distinction between relative and absolute income gaps, see Rosenblatt and Im (2013) and Agénor (2017).

<sup>4</sup> However, this finding is not supported by Rosenblatt and Im (2013) who could not find a common growth configuration of a plateau-type across the countries identified as being caught in the MIT.

<sup>5</sup> Reddy and Minoiu (2007) define the depth of the stagnation as the percentage by which the income would have been higher than its observed level at the end of the study period, if the country had a steady income from the "beginning" of stagnation and year for which the minimum income during the period of stagnation has been reached.

<sup>6</sup> Various other studies have also focused on short term shock-related determinants to explain growth breakdowns (Calvo, 1998; Calvo and Reinhart, 2002; Becker and Mauro, 2006; Cerra and Saxena, 2008; Carrière-Swallow and Céspedes, 2013; Abiad *et al.*, 2015). Still, they are relevant for the explanation of short-term growth volatility, and not the pattern of long-term trend volatility associated with MIT.

reach the next level of income, as Williamson states (2011)<sup>7</sup>. Another important criticism is the absence of a sound theory of middle-income traps on which empirical tests could rely<sup>8</sup>, and the absence of a clear theoretical distinction between models of multiple equilibria, typically represented by models of traps, and multiple steady state models, drawn from long-term growth theory (Rodriguez, 2008; Blum et al., 2006). As a consequence, the very existence of the MIT has been challenged by a series of papers contending that the episodes of growth slowdowns observed in middle-income economies may not necessarily be symptoms of a MIT but, rather, of the mechanism of convergence towards their long-term level of income per capita (Alias et al., 2014) or a transition from lower- to higher-levels of economic development (Bulman et al., 2015).

Acknowledging these caveats, a *second approach* has consisted in relying on *a priori* statistical criteria in order to define MIT episodes, and in subsequently listing the countries that have been trapped at middle-income levels. In line with the literature on growth transitions, Eichengreen *et al.* (2013) define the trap as an enduring growth slowdown spell. A country is in the MIT if its income is above \$10,000 (in constant 2005 prices) and has undergone a slowing growth episode satisfying two conditions: (1) the average growth over the seven years preceding the downturn must be greater than 3.5%; (2) the decline in growth must have been significant and therefore the average growth over the seven years following the slowdown should be at least 2%. They identify growth slowdown episodes around the \$17,000 threshold, for per capita income amounting 57% of the technological frontier own income and when the share of industrial employment reaches 23%. They also find that the higher the rate of growth over the seven years prior to the slowdown, the more likely this slowdown will take place. In a different vein, Felipe *et al.* (2012) uses the distribution of the number of years a country has spent in the lower- or upper-middle income category to identify a duration threshold above which, and a growth rate threshold below which, a country is supposed to be trapped. Although purely empirical, this approach has the merit to be based on a formal definition, albeit statistical, of the MIT. In a slightly different vein, some papers have attempted to identify episodes of MIT by looking at catch-up failures, i.e. growth trajectories that do not fit the projections made on the basis of unconditional or conditional convergence models. Robertson and Ye (2013) test the existence of a MIT on time series data by checking whether the long run estimated mean value of the log income difference between each country and the technological frontier is stationary and nonzero and lies in the middle-income band and find only one half of the middle-income countries of their sample fit to their MIT concept<sup>9</sup>. Aiyar *et al.* (2013) identifies growth slowdowns by estimating the extent and

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<sup>7</sup> Before the present paper, Rodrik (1999) was the single study to have investigated the combined impact of two groups of determinants: inequality and conflict management institutions.

<sup>8</sup> By contrast, poverty traps have been formally analyzed by various important theoretical contributions (Banerjee and Newman, 1993; Galor and Zeira, 1993; Azariadis, 2006)

<sup>9</sup> All but 9 out of the 46 countries classified as middle-income in 2007 had passed an informal test of MIT consisting in having a mean growth rate of income relative to the USA not significantly different from zero, suggesting that these countries did not catch-up relative to the technological frontier during the observed period. According to the authors, this test rules out the possibility that the slowdown is due to a convergence episode or to purely stochastic trends. The 23 countries (years of break) having passed the formal MIT test are Bolivia (1982) Botswana, Bulgaria (1991), Costa Rica (1980) El Salvador (1978), Guatemala (1982), Honduras (1982), Indonesia (1997), Iran (1976), Iraq (1990), Jordan (1995), Lebanon, Mexico (1979/1994), Mongolia (1990), Morocco (1960), Panama (1979), Peru (1982/1987), South Africa (1983), Syria (1979/2000), Thailand (1990), Tunisia (1983) and Turkey.

time duration of negative deviations from the predicted growth path<sup>10</sup> and that match the stylized facts of traps observed in Latin American developing regions, the Middle East, North Africa, Sub-Saharan Africa and East Asia during the period from 1975 to 1985. Also relying on the convergence theory, Rosenblat and Im (2013) have reconstituted matrices of transition between the different categories of income using transition probability and duration estimated at a first stage by calculating the number of years required for each middle-income country to reach the higher income category on the basis of its initial income and growth rate differential with the frontier. They find on their sample that the transition from middle- to higher income is just as likely as the transition from the lower to the middle-income category, with the duration of the former being not significantly longer. Lastly, Pritchett and Summers (2014) have shown that growth slowdowns at middle-income levels is better explained by the 'regression to the mean' phenomenon than by the alleged middle-income trap one. In addition, they argue that the episodes of rapid growth tend to be affected by frequent and discontinuous drop-offs in developing countries. Although contributing to the debate about how best identifying episodes of middle-income traps and their real nature, these various studies are not informative about the drivers of persistent growth slowdown that should be counterbalanced by efficient policies.

Surprisingly, although the MIT challenges the standard theories of economic development, only a few papers have tried to empirically identify the mechanisms underlying it. In the present paper, we propose an evidence-based overview of the determinants of MITs, that is of the factors that have been proposed to explain the persistent slowdown of economic growth faced by numerous middle-income economies. We identify episodes of middle-income growth slowdown (MIT) in a panel of 132 countries over 1970-2010 by using a mixed approach combining two criteria relative respectively to the extent of the growth slowdown (Eichengreen *et al.*, 2012) and to the duration of the stagnation spell (Felipe *et al.*, 2012). The MIT episodes that were identified are then used in regressions in order to identify if the impact of various determinants put forward by the literature on MITs on medium-run GDP growth significantly differs for the middle-income countries inside the MIT. Four main categories of explanations for the persistent growth slowdown symptom are tested in a unified model of medium-run growth: (i) growth regime and factor misallocation, (ii) trade and productive structure transformation, (iii) bad policies, and (iv) the distribution of income. We find that the regimes of growth, the demographic dividend, the patterns of productive change and diversification, the policies related to productive transformation and the use of skills and, lastly the civil and external conflicts help explain why some middle countries undergo persistent growth slowdowns. On the contrary, physical and human capital accumulation, democracy, inequality and redistribution failed to explain enduring growth slowdowns.

To our knowledge, this evidence-based survey of the determinants of MITs is the first to have systematically tested the different candidate explanations proposed by the recent literature on this issue. On the one hand, the bulk of existing papers have proposed either statistical attempts of identification of the countries located in the trap based on various criteria of growth slowdowns, or listings of the symptoms of MIT generally based on

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<sup>10</sup> Their methodology focuses on countries that have started to converge toward a higher level of income and experience a growth slowdown episode relative to the predicted catch-up growth, during several consecutive years. They regress GDP per capita on the lagged income and measures of physical and human capital accumulation for a panel of 138 countries over 11 periods (1955 to 2009) and identify a period of slower growth if the deterioration of the effective performance against predicted growth (measured by the residual) is sufficiently pronounced to place the period observed in the smallest quintile of change in residuals between two successive years.

impressionist evidence drawn from country surveys. Most of these symptoms refer to structural features or to government policies typical of middle-income countries that hinder a series of transformation required to transition to high-income growth strategies (Bulman et al., 2015)<sup>11</sup>. This strand of literature was recently overviewed by Agénor (2017), albeit without empirically testing the candidate explanations. On the other hand, a handful of papers have provided empirical tests of the determinants of medium-run economic growth (Hausmann et al., 2006, 2008; Eichengreen et al., 2013; Berg et al., 2012; Bulman et al., 2015). However, they have not systematically modeled medium-run growth slowdowns with explicit reference to the MIT, as we do in the present paper and are poorly informative about the differentiated patterns of growth inside and outside the trap.

The rest of the paper is structured as follows. Section 2 explains our identification method based on the various criteria found in the literature and the logic of our approach consisting in empirically comparing medium run growth patterns inside and outside the MIT. Then, sections 3, 4 and 5 test several mechanisms of explanation of MITs that are currently found in the literature: Growth regimes, productive transformation and bad policies, and the conflict and distributional issues. Lastly, section 6 concludes.

## **2. Who is caught in the MIT and what difference does it make? Methodological issues**

As put forward in Section 2, we have chosen typifying the MIT as *a deterministic medium-run growth slowdown episode, out of the predictable trajectory that would be driven by a convergence or catch-up process* rather than defining it as a low-level stable equilibrium. This definition allows for a simple and straightforward empirical approach to be used to identify which country was stuck in the MIT during the last four decades and to test the different candidate explanations of the MIT that are found in the literature. Next subsection 3.1 first identifies which countries are stuck in the MIT, before section 3.2 explains our methodological approach.

### *3.1. Who is caught in the MIT? The identification of growth slowdown spells by using a mixed approach*

In order to address the duration and magnitude of growth slowdowns at middle-income levels, we have chosen to combine the two approaches reviewed above. First, after Eichengreen et al (2011, 2013), slowdown episodes are identified, for each country, by using clear criteria of breakdown year and slowdown duration. Then we define conditions limiting the region of the growth slowdown to middle-income countries. The episodes of growth slowdown fulfilling these conditions are thus identified as middle-income growth slowdowns. As in Felipe et al (2012), we identify a threshold above which a country is considered as trapped at middle-income level.

We therefore start by identifying breakpoints, i.e., the years characterized by a significant downward change in the rate of GDP growth<sup>12</sup>. As in Eichengreen et al. (2011, 2013), we identify an episode of growth slowdown when GDP growth rate fulfills two conditions:

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<sup>11</sup> Jiang (2011) is highly illustrative of the latter approach as it lists growing inequality, inefficient financial system, over-urbanization and growing spatial polarization, shortage of public services, unemployment and skill misallocation, corruption, social unrest and decreasing trust, electoral instability.

<sup>12</sup> We use the Maddison (2010) database because it is very comprehensive, covering most countries over the period 1950-2010. GDP per capita is expressed in constant 1990 dollars We complete some series until 2010

$$(C1) \bar{g}_{t-n,t} \geq 0.035,$$

$$(C2) \bar{g}_{t-n,t} - \bar{g}_{t,t+n} \geq 0.020,$$

where  $\bar{g}_{t-n,t}$  is the average growth rate of GDP per capita between times  $t-n$  and  $t$ , and  $\bar{g}_{t,t}$  the average growth rate between times  $t$  and  $t+n$ . Like in Eichengreen (2011), we set  $n$  to 7. C1 implies that the average growth rate of the seven-year window prior to the slowdown year should be at least 3.5%. C2 defines a growth slowdown as a decline of at least 2 % points of the average growth rate during at least seven years after the break year. This condition implies that the growth decline has to be both substantial and sustained.

Eichengreen et al. (2011) have added a third condition on GDP per capita, which must be greater than \$10,000. Yet, we consider it is too high a threshold since it evacuates from the analysis a lot of lower middle-income countries that may be trapped in low growth equilibrium akin to MITs. We therefore introduced a more fine-grained filter in order to be able to differentiate or results for the lower- and upper-middle income categories. Although useful, the World Bank classification of income categories is not directly applicable to our data as far it is based on the gross national income (GNI) per capita series whereas we use gross domestic product (GDP) per capita<sup>13</sup>. To establish our thresholds, we thus had to follow Felipe et al. (2012) who have also used the Maddison dataset and calculated a correspondence between the GNI and GDP thresholds. Using data from 1987 to 2010, they have (1) assigned countries based on their 1990 GDP per capita measured in PPP in their income category for 10,080 different sets of thresholds<sup>14</sup>, (2) computed the pair-wise correlations between these 10,080 classifications and the official World Bank classifications, and (3) selected the set of thresholds showing the strongest correlation (0.9741) with the official World Bank classification: low-income countries have per capita GDP below \$2,000, lower-middle-income countries have GDP per capita standing between \$2,000 and \$7,250, upper-middle-income countries have GDP per capita between \$7,250 and \$11,250 and higher income countries have per capita GDP above \$11,250.

A third condition (C3) restricting MIT to the years when the country satisfying conditions C1 and C2 is located at lower- and upper-middle-income levels is therefore added:

$$(C3) \$2,000 \leq y_T < \$7,250 \text{ or } \$7,250 \leq y_T < \$11,250, \text{ where } y_T \text{ is the per capita GDP in year } T \text{ (expressed in PPP adjusted constant 1990 dollar), with } t < T < t+n \text{ and } n = 7 \text{ as in conditions (2) and (3).}$$

The first year that a country meets these three conditions is taken as the year of entry into a middle-income growth slowdown spell. For the 132 countries of our sample, we could

using the GDP growth rate per capita (in local currency) measured at constant prices by the International Monetary Fund. In the absence of data, the following countries are excluded: the countries of the former Russian Federation; the countries of the former republics of Czechoslovakia and Yugoslavia; Cuba, North Korea, Puerto Rico, Somalia, the Palestinian territories and Trinidad and Tobago. In the end, we collect data from 132 countries from 1950 to 2010.

<sup>13</sup> Despite the high degree of correspondence between the thresholds, some countries may not have the same classification as that of the World Bank.

<sup>14</sup> 14 intervals of \$250 for the low income segment ranging from \$1,500 to \$4,750  $\times$  16 intervals of \$250 for the lower middle-income segment ranging from \$5,000 to \$8,750  $\times$  45 intervals of \$250 for the lower middle-income segment ranging from \$9,000 to \$20,000 = 10,080 sets of thresholds. For example, the first set of threshold is given by the vector (\$1,500; \$5,000; \$9,000) and the last 10080<sup>th</sup> set is the vector (\$4,750; \$8,750; \$20,000).



identify 58 countries having entered into a middle-income trap from 1960 to 2010 (Table A2 in Appendix)<sup>15</sup>.

Finally, Felipe et al (2012) distinguish between low middle-income and upper middle-income trap as well as between earlier and recent transitions. In our paper, we do not do such distinctions, plus we use the distribution of slowdown duration rather than the number of years as middle-income. The status of a MIT is then attributed to each middle-income country having slowdown duration above the sample mean duration. Countries are therefore considered to be trapped into a middle-income trap if they have remained more than 30 years in the middle-income category over 1950-2010.

### 3.2. *What difference does it make being caught in the MIT? Comparing medium run growth patterns inside and outside the trap*

The present paper adopts the second approach by implementing a simple exploratory approach that compares the impact of various candidate explanations of the persistent growth slowdown characterizing the MIT and the transition from intermediary to higher income levels. Our intuition is that the growth impact of various factors may be different in the MICs inside and outside the trap. By estimating equation 1, we identify the extent to which the medium-run growth impact of each determinant identified by the MIT literature is different for the middle-income countries inside the trap:

$$(1) \quad \text{Av. GDP growth}_{i,t-t+7} = \alpha_1 * \text{controls}_{it} + \alpha_2 * \text{MIT}_{it} + \alpha_3 * \text{determinant}_{it} + \alpha_4 * \text{MIT}_{it} * \text{determinant}_{it} + \mu_i + \nu_t + \varepsilon_{it}$$

In Equation 1, country  $i$ 's medium-run growth prospect in year  $t$ , measured by the average growth rate over the seven-year subsequent spell, is regressed by using a fixed effect panel estimator on a set of standard growth controls including the various determinants, all measured in  $t$ . The dummy variable MIT takes the value 1 for the country-year individual observations meeting the different conditions of a MIT episode as identified in previous section 3. For example, consider a country that has been into the middle-income category since 1972. This country entered into a growth slowdown in 1975 and has a slowdown duration at middle-income level of 31 years. The years 1975-2006 are coded 1 and those from 1972 to 1975 and after 2006 are coded 0.

Various determinants of the sustained middle-income growth slowdown have been advanced by the recent literature, determinants that we choose to classify under three distinct, albeit related, dimensions: (1) the shift from one factor accumulation regime, based on physical capital accumulation and technological imitation, to a new one, based on skill-intensive industries and technological innovation, (2) the deficit of productive transformation and its trade-related determinants, and (3) the distributional and institutional issues, notably related to the intensity of sociopolitical conflicts.

The method of identification is simple: each potential determinant of the MIT is introduced as part of an interaction term with the MIT dummy described above, besides

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<sup>15</sup> Out of these 58 cases, 17 countries entered the MIT in the 1960s, 30 in the 1970s, 5 in the 1980s and 5 in the 1990s. The average number of years during which our sample countries stay in the lower-and upper-middle-income segment are respectively 20 years and 7 years. The duration dispersion is however considerably larger for the episodes of lower middle-income growth slowdowns. Although only one quarter of the lower middle-income growth slowdowns have lasted less than 11 years, time duration ranged between 25 and 57 years for the remaining three quarters.

traditional controls of GDP growth. In equation 1, the estimated coefficient  $\alpha_4$  therefore identifies the extent to which the impact of any singular growth determinant is minored or magnified for countries inside the MIT, with reference to the estimated impact  $\alpha_3$  of this very determinant for the middle-income countries outside the MIT. Estimations include time and country fixed effects in order to control for time-varying (identical for all countries) and time-invariant (specific to each country) non-observable variables that may affect average GDP growth in the subsequent period.

Estimating a truly dynamic model would allow for catch-up to be controlled for. As evoked in the introduction, MIT could simply correspond to a process of reversion to the mean of the convergence-type. Still, the nature of our dependent variable, the seven-year growth spell consecutive to each year  $t$ , prevents us from introducing a lagged dependent term on the right hand side of equation 1. We could nevertheless test that introducing a lagged value of the initial GDP per capita among the explaining factors did not modify substantially the results reported in the paper. This checks that the impact we find is not driven by a catch-up process that we have left uncontrolled in regressions. As for endogeneity bias, it has been contained by the fact that the explaining factors measured in  $t$  on the right hand side are lagged in accordance with the dependent variable which stands for the average growth rate recorded between  $t+1$  and  $t+7$ . Although the risk of reverse causality is limited by the choice of future growth as the dependent variable<sup>16</sup>, our fixed effect estimations essentially measure correlations, that is different patterns of statistical relation between a series of policy or economic determinants observed at each period and subsequent medium-run growth, and not the pure causal impact of each determinant. Still, we could identify a series of factors which are differently associated to subsequent growth inside and outside the trap.

### 3. Growth regimes and labor misallocation

Various recent empirical assessments of MITs have converged towards the idea that the countries stuck in the MIT have reached a stage of development where the structures, strategies, endowments and institutions that had initially promoted growth are no longer effective in sustaining it (Flaen et al., 2007). MITs may thus be the symptom of the survival of an inadequate regime of factor accumulation along with the allocation inefficiencies related to it, and the necessary transition from a growth model based on technological imitation, essentially driven by broad mobilization of weakly skilled labor and physical capital, to a model based on innovation being too slow or blocked.

It is now widely acknowledged that the binding constraints, as well as the economic policies or institutions alleviating them, change along the path of economic development (Rodrik, 1999, 2008; Pritchett, 2003; Aghion and Howitt, 2006). According to Rodrik (1999), escaping the poverty trap requires a sustained increase of the investment ratio, this 'investment transition' being fed by both foreign and domestic investors. The first successful stage of economic development is generally based on labor and capital transfers from lower to higher productivity industries, with domestic and foreign investment being spurred by comparative advantage in labor-intensive manufacturing. At this stage, former binding constraints related to accumulation are alleviated, while new ones simultaneously emerge: insofar as the competitiveness of labor-intensive industries is undermined by rising wages, the drivers of extensive growth become exhausted at middle-income levels, with future growth

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<sup>16</sup> Endogeneity issues are partially addressed by the one- to seven-year lag introduced by using subsequent seven-year average growth rates as the dependent.

prospects being constrained by new difficulties. Once economies reach middle-income levels, indeed, decreasing returns and lower opportunities for scale economies start shrinking incentives to accumulate more physical capital. Concurrently, human capital accumulation becomes increasingly strategic for sustaining economic growth (Agenor et al., 2012, Agenor, 2017). The policies and institutions prompting the investment transition at low income level, including private property rights and contract enforcement, are not the best fitted to prompt the investment shift toward skills and knowledge and innovation (Rodrik, 2000, 2008a, 2008b; Doner and Schneider, 2016). Acemoglu et al. (2006) have also provided analytical and empirical proof that, as the middle-income country comes closest to the technological frontier, protectionist policies and rigid market structures start thwarting the transition to the new growth regime, thereby blocking the country into a "non-convergence trap" much akin to a MIT. Although the middle-income economy successfully escaped the poverty trap, it is now unable to converge toward the technological frontier and achieve high-level equilibrium by shifting its imitation-led regime toward the innovation-led one.

Table 1. FE estimations: MIT interactions with investment, population and education

	(1) Investment	(2) Population	(3) Dependency	(4) Population* Industry	(5) Secondary	(6) Tertiary	(7) Tertiary* Distance
Investment	-.001*** (1.6e-04)	-.001*** (1.1e-04)	-.001*** (1.2e-04)	-7.9e-04*** (1.2e-04)	-.001*** (1.1e-04)	-.001*** (1.1e-04)	-9.5e-05 (1.1e-04)
Population	-.003*** (9.7e-04)	.0013 (.0017)	7.7e-04 (1.0e-04)	-.005 (.003)	6.0e-05 (.001)	8.1e-05 (.001)	2.6e-04 (8.7e-04)
Dependency	-	-	1.5e-04 (1.1e-04)	-	-	-	-
Second. Educ.	7.5e-04*** (1.0e-04)	-7.1e-04*** (1.0e-04)	2.0e-05 (1.4e-04)	2.1e-04 (1.4e-04)	-1.6e-04 (1.8e-04)	6.0e-05 (1.4e-04)	6.2e-05 (1.2e-04)
Tertiary educ.	-	-	-	-	9.8e-04** (4.0e-05)	7.7e-05 (4.4e-04)	.003*** (8.6e-05)
Dist. to frontier	-	-	-	-	-	-	-.048*** (.004)
MIT	-.030*** (.0055)	-.011** (.0051)	.009 (.008)	.003 (.011)	-.029*** (.003)	-.030*** (.003)	-.021** (.009)
Investment*MIT	-3.9e-05 (2.1e-04)	-	-	-	-	-	-
Population*MIT	-	-.0083*** (.0017)	-	.001 <sup>a</sup> (.004)	-	-	-
Dependency*MIT	-	-	-4.6e-04*** (1.0e-04)	-	-	-	-
Secondary*MIT	-	-	-	-	3.6e-04** (1.7e-04)	-	-
Tertiary*MIT	-	-	-	-	-	.002*** (4.8e-04)	-.009*** <sup>b</sup> (.002)
Population*Indus.	-	-	-	.024** <sup>a</sup> (.010)	-	-	-
Pop.*MIT*Indus.	-	-	-	-.019* (.011)	-	-	-
Tertiary*dist*MIT	-	-	-	-	-	-	-.005*** (.001)
Constant	.060*** (.0046)	.050*** (.0043)	.049*** (.010)	.050*** (.004)	.062*** (.004)	.061*** (.004)	.033*** (.007)

R <sup>2</sup> (within)	.24	.26	.35	.26	.34	.35	.51
Obs.	1243	1243	1243	1243	1243	1243	1243
Groups	56	56	56	56	56	56	56
Hausman test	p=.000	p=.000	p=.000	p=.000	p=.000	p=.000	p=.000

Notes: <sup>a</sup> Industry's main effect and MIT\*Industry interaction were included in the regression although their coefficients were not reported (not significant); <sup>b</sup> other interactions tertiary\*log distance to frontier, MIT\*log distance to frontier were included in the regression although their coefficients were not reported (not significant); year fixed effects are included in all estimations

When the so-called accumulation-led and innovation-led growth regimes are linked to educational issues, additional dynamic mechanisms of MIT can be highlighted. In Vandebussche et al. (2006), the long-run growth impact of skills is assumed to be conditional upon whether the growth regime is based on imitating the frontier or innovating from the frontier. When the country gets closer to the technological frontier, investment in tertiary education spurs the ability to produce advanced technology, while investing in primary and secondary education simply improves imitation capabilities. Agénor et al. (2012) develop a two-sector occupational choice model in which the persistence of the imitation-led regime of growth generates a stable low-level equilibrium called 'imitation trap', highly typical of middle-income countries. By migrating to highly productive innovation sectors and subsequently generating knowledge externalities, a higher skill ratio in the labor force is supposed to spur output growth through in the long run. If productivity and wage differentials across the innovation and imitation sectors are too narrow, individual investment in the advanced skills required to work in the innovation sector is discouraged. High-ability individuals are consequently stuck in the imitation sector where they are unproductively occupied and are unable to generate knowledge externalities<sup>17</sup>.

Although these dynamic mechanisms would deserve a full empirical testing, the estimation of equation 1 provide preliminary pieces of supporting evidence of differentiated growth regimes with respect to physical capital and skills. In table 1's column 1, the non-significant coefficient of the interaction term investment\*MIT suggests that investment's growth contribution inside the MIT does not significantly differ from that of the other middle-income countries<sup>18</sup>. Table 1's column 5 to 7 test the assumption that the growth impact of two types of skills might differ for middle countries inside and outside the MIT by using secondary and tertiary education levels as proxies of respectively low- and intermediate-skilled labour and highly-skilled workers. If the MIT was to be explained by the economy's limited capacity to use workers with tertiary education productively enough to deliver aggregate growth benefits, the impact of tertiary education should be lower inside than outside the MIT. Estimated coefficients for Secondary\*MIT and Secondary education in column 5 respectively show that larger stocks of low- and intermediate-skills, proxied by the stock of secondary education, stimulate growth in the middle-income countries inside the MIT, while having no significant effect outside the trap.

Surprisingly, the same result holds for tertiary education measuring high skills, as reported in column 6, although we should have expected the reverse consistently with our assumption above. Still, if we control for innovation and imitation capacities by introducing the log of distance to the technological frontier as an additional term in the interaction, we

<sup>17</sup> Likewise, advanced public infrastructures, like transport or networks, fail to deliver their direct positive effects on productivity and indirect positive effect on the supply of skilled labour.

<sup>18</sup> When estimation is replicated on a larger sample including both low and middle-income economies, however, investment's contribution to medium-run growth is significantly lower inside the trap than it is for all middle-income unaffected by the slowdown and low income countries (not reported).

find more consistent evidence. The estimated coefficients for tertiary education, tertiary\*MIT and tertiary\*distance\*MIT reported in column 7 respectively tell that, although tertiary education significantly improves medium-run economic growth prospects for economies outside the MIT (+.003), the growth impact of highly skilled work not only becomes negative for the countries inside the trap (-.006 = .003 -.009) but also worsens with the distance to the frontier (-.014 = -.005 -.009 for the sample's mean value of the distance to the frontier). Although they are not based on a full test of the models' prediction, these findings provide preliminary evidence that, in a context of increased availability of highly-skilled workers and of rising cost of low-skilled and intermediate-skilled labor, middle-income countries' governments should promote innovation capacities in order to relieve factor misallocation and avoid the MIT (Agénor and Dinh, 2013).

The demographic transition is an additional structural determinant of middle-income growth slowdowns that can be related to both the growth regime and misallocation issues. Furuoka and Munir (2011) has evidenced the existence of positive reinforcement mechanisms between population growth and structural change, with population growth encouraging competition between companies and increasing the potential market size, which encourages entrepreneurs to start new activities. The nature and size of the impact of changes in the population age structure on medium-run growth is conditional on the stage of the demographic transition. At the earliest and the latest stages of demographic transition, high dependency ratios may be negative for growth since the inactive children and pensioners both are weakly contributive to wealth creation and saving (Leff, 1969). At intermediate stages of the demographic transition, a demographic dividend may well appear, as young dependents become active and smaller dependency ratio deliver growth benefits by easing constraints on savings and labor supply (Bloom et al., 2001; Van Der Ven and Smits, 2011).

Still, both the existence and magnitude of a demographic dividend are conditional on the matching between the young workers entering the labor market and the skilled and unskilled labor demand prompted by economic growth and structural change. Put differently, rapid population growth may be detrimental to economic growth when young workers face weak employment opportunities due to a poorly inclusive growth regime. Most middle-income countries fit into this vicious pattern, with likely adverse impacts on politico-economic stability, as evidenced by Campante and Chor (2012). Some middle-income countries may also suffer from growth slowdown because the momentum effect of the demographic dividend progressively vanishes with population aging and dependence ratios re-augmenting. Nowadays, this could be the case for China and this may have happened much earlier for Latin-American countries like Argentina.

According to our estimations, the impact of demography on medium-run growth is clearly different in the middle-income countries undergoing growth slowdown. Table 1 shows that population growth (column 2 and 4) and dependency ratios (column 5) both tend to reduce GDP growth in countries located in MIT, while having no significant growth impact for the other middle-income countries (columns 4 and 5) or any other reference subsample (middle and lower income or middle and higher income outside of the MIT) (not reported). Column 4 further tests the assumption that in the MIT, misallocation issues prompted by a large workforce (proxied by population growth) facing few formal and productive employment opportunities (proxied by the GDP share of industry) might reduce medium-run growth prospects. It shows that although the combination of a larger population growth and industrial share of GDP tends to increase medium-run growth prospects for all middle-income countries, this impact is five times lower for the countries trapped in the MIT (.024 - .019 = .005).

The dynamics of factor accumulation, and its incapacity to increase productivity, is frequently put forward as a major explanation for MITs. Our results suggest that there is no difference between middle-income countries outside and inside the middle-income trap with respect to the growth impact of factor accumulation. On the other hand, we found evidence of the misallocation issue. Indeed, the mismatch between an increasing number of highly skilled workers and the innovation capacity, as well as the employment opportunities, dampens the positive effect of human capital and workforce on medium-run growth for the countries inside the trap.

#### **4. The pace of productive transformation and the ‘scissor effect’**

##### *4.1. The scissor effect*

Trade and productive transformation are a second crucial dimensions of explanation of MITs. They are, by and large, related to the so-called ‘scissor effect’, that is the fact that middle-income economies tend to be squeezed between low-wage poor-country competitors that dominate in mature industries and rich country innovators that dominate in skill-intensive industries undergoing rapid technological change (Gill and Kharas, 2007, 2015). Still, lack of productive transformation is also related to complex policy issues that would need to be more deeply investigated.

All along its transition from lower- to middle-income levels, physical capital accumulation tends to gradually modify factor endowments and relative prices, thereby modifying the structure of a country’s comparative advantage (World Bank, 2012). GDP growth will slow down as the comparative advantage which initially sustained the high growth rates fades away, after middle-income level is reached. The exhaustion of initial comparative advantage as the country develops makes it no longer possible to boost productivity through simply reallocating unskilled labour from agriculture to unsophisticated export industries, while skill-intensive industries are not yet competitive (Agénor et al., 2012; Eichengreen et al., 2011, 2013). Productivity slowdown is thus explained by the simultaneous loss of comparative advantage in labor-intensive industries, consecutive to rising wages, and the weakness of new comparative advantage in skill-intensive industries to challenge advanced economies in world markets (Gill and Kharas, 2007; Spence, 2011; Kharas and Kohli, 2011; Felipe et al., 2012). Consequently, deeper trade integration may not be as beneficial to the productive transformation of middle-income economies as it is to that of lower-income or higher-income countries endowed with firmer comparative advantage (Kharas et al., 2010; Udomsaph and Zeufack; 2010; Felipe et al., 2012; Jankowska et al., 2012).

Several explanations for this claim can be found in the literature. The risk of falling into a MIT is greater for the countries continuing to strongly defy their comparative advantage, while they are already diversified. Lectard and Rougier (2017) provide empirical evidence of this point by showing that the impact of the distance to comparative advantage on export diversification and export sophistication is non-linear and heterogeneous, the margins of efficiency decreasing with the proximity to the technological frontier. Therefore, output and export re-concentration is the crucial dimension of structural change for middle-income countries. As evidenced by Imbs and Wacziarg (2003) and Cadot et al. (2011), productive transformation is first driven by output and export diversification along the extensive margins, output and export concentration reaching their minimum level at intermediate levels of economic development. Then, further modernizing production requires diversification along the intensive margins (Cadot et al., 2011) and productive re-concentration through

rationalization and selection of the most productive industries and firms (Hausmann and Rodrik, 2003).

Table 2's column 1 confirms that, further diversifying export has an adverse impact on medium-run growth for the middle-income countries located inside the MIT while having no significant impact outside the trap. As for the margins of diversification, columns 2 and 3 illustrate that whereas export diversification along the extensive and intensive margins both improved medium-run growth prospects for the middle-income countries outside the trap, they both had a negative impact on medium-run growth for economies overcoming an enduring slowdown during the period investigated. The magnitude of the adverse impact is nevertheless larger for the export diversification along the extensive margins than for the diversification along the intensive margins (-.0033 versus -.0022). This pattern is confirmed by the estimation results reported in column 5 showing that the industrial share of GDP is adversely associated to medium-run growth in all middle-income countries, with this adverse association being three times larger inside the trap ( $-.105 = -.030 + -.075$ ) than outside the trap (-.030).

Table 2. FE estimations of the seven year-average growth rates: MIT interactions with structural change variables (Reference group is all non-MIT middle-income countries)

	(1) X diversif.	(2) Intensive marg.	(3) Extensive marg.	(4) Industry share	(5) Services share	(6) techno. distance
Investment	.063*** (.020)	.096*** (.020)	.128*** (.020)	.092*** (.020)	.102*** (.020)	.070*** (.018)
Investment*year	-3.2e-05*** (1.0e-05)	-4.9e-05*** (1.0e-05)	-6.5e-05*** (1.0e-05)	-4.7e-05*** (9.9e-06)	-5.2e-05*** (1.0e-05)	-3.6e-05*** (9.4e-06)
Population	-.0012 (.0008)	-4.4e-04 (.0010)	-9.8e-04 (.0010)	5.0e-04 (9.9e-04)	4.0e-04 (.0010)	-.002** (.0010)
Second. educ.	5.0e-04*** (1.0e-04)	5.0e-04*** (1.5e-04)	4.3e-04*** (1.5e-04)	4.2e-04*** (1.4e-04)	3.9e-04*** (1.5e-04)	3.8e-04*** (1.3e-04)
MIT	-.0065 (.0053)	-.0093 (.0072)	-.0162*** (.0034)	.0052 (.0064)	-.0522*** (.0083)	-.062*** (.0076)
X diversif.	4.0e-04 (.0012)	-	-	-	-	-
Intens. margins	-	.0035** (.0018)	-	-	-	-
Extens. margins	-	-	.0157*** (.0034)	-	-	-
Industry share	-	-	-	-.030** (.0146)	-	-
Services share	-	-	-	-	.0145 (.0165)	-
Techno. distance	-	-	-	-	-	-.037*** (.003)
Diversif.*MIT	-.0033** (.0015)	-	-	-	-	-
Intensive*MIT	-	-.0057*** (.0022)	-	-	-	-
Extensive*MIT	-	-	-.019*** (.0037)	-	-	-
Industry*MIT	-	-	-	-.0757*** (.0146)	-	-
Services*MIT	-	-	-	-	.0538*** (.0160)	-
Distance*MIT	-	-	-	-	-	-.020*** (.004)
Constante	-1.43*** (.485)	-2.06*** (.456)	-3.02*** (.477)	-1.75*** (.446)	-2.04*** (.457)	-1.60***

	(.406)					
R <sup>2</sup> (within)	.35	.31	.40	.39	.37	.42
Obs.	1222	1219	1222	1219	1219	1243
Groups	55	55	55	55	55	56
Hausman test	p=.000	p=.000	p=.000	p=.000	p=.000	p=.000

Note: Time and country fixed effects included

Conversely, an increase of the GDP share of service only spurs medium-run growth for the countries inside the trap, potentially linking MITs with the issue of labor and capital flowing toward services activities which are weakly contributive to global factor productivity (McMillan and Rodrik, 2011).

To summarize our findings, the estimates reported in the Table 3 confirm the high stakes associated with export re-concentration in middle-income countries and suggest that middle-income persistent growth slowdowns could well result from an insufficient move from extensive to intensive margins and from an excessive expansion of weakly productive service activities.

#### 4.2. Further evidence on the skill misallocation effect

Gill and Kharas (2015: 7) recall that the most important lesson from Imbs and Wacziarg (2003), namely that more advanced countries tend to re-specialize at higher-middle income, has tended to be ignored by many middle-income countries trying to artificially encourage the rise of new industries without economic foundations. Since many middle-income economies have not started rationalizing their production basket, notably by easing the market selection of competitive industries, their industries are not all truly efficient and competitive (Hausmann and Rodrik, 2003).

At middle-income levels, structural change might increasingly rely on intra-industry factor mobility, through selection and survival of the most competitive firms (Melitz, 2003; UNIDO, 2010b). The transition to a modern economy therefore requires that the least productive sectors and firms are progressively excluded from their market, with this selection mechanism implying job destructions. Although skilled labour can be absorbed into the most productive sectors and firms, unskilled labour will have to move to the less productive and less paid informal sector or service activities, with adverse effect on the net economy-wide productivity gain and growth<sup>19</sup>. When the raise of new sectors or the selection of competitive industries are constrained by finance (Agénor and Canuto, 2014) and of trade integration, opportunities of productive jobs for skilled workers are limited (Nungsari and Zeufack, 2009). In this context, large endowments of skilled labor may not only fail to deliver their expected positive growth impact, but may also have adverse impact on medium run growth through social unrest, as explained by Campante and Chor (2012).

Table 3 tests several assumptions as to the impact of such dimensions of economic policies as trade openness, financial development and financial openness on medium-run growth prospects. In line with what precedes, we also systematically envisage that variations in skill ratios may modulate the impact of these policies on medium-run growth prospects inside and outside the trap. First, column 1 confirms that trade openness has a negative impact

<sup>19</sup> McMillan and Rodrik (2011) also show that job transfers to the most productive sectors do not necessarily contribute to the transition to a higher level of income since, in countries with comparative advantage in commodity exporting, the extent of trade-induced labour reallocation toward extraction sectors is too limited to impact aggregate incomes.



on medium-run growth prospects for all middle-income countries, with the magnitude of this negative impact being larger for countries inside the trap. Likewise, the type of financial development matters since whereas financial openness has a negative impact on medium-run growth for all middle-income countries, this adverse effect proves two times larger for the countries inside the trap (column 7).

It is worth noticing that, across all estimations, the interaction term MIT\*Skill ratio always takes a negative significant coefficient whereas the skilled ratio takes a positive and significant coefficient of a similar magnitude, suggesting a differentiated growth impact of skills inside and outside the trap.

Table 3. FE estimations: MIT interactions with policy variables (sample = all middle-income countries)

	(1) Trade*MIT	(2) Trade*Skill *MIT	(3) Financial dev.*MIT	(4) Fin. dev. *Skill *MIT	(5) FDI*MIT	(6) FDI*Skill ratio*MIT	(7) Financial open.*MIT
Investment	.099*** (.019)	.090*** (.020)	.058*** (.019)	.046*** (.020)	.082*** (.019)	.082*** (.019)	.072*** (.019)
Invest.*year	-5.1e-05*** (9.7e-06)	-4.6e-05*** (9.9e-06)	-3.0e-05*** (9.8e-06)	-2.4e-05** (1.0e-05)	-4.2e-05*** (9.6e-06)	-4.2e-05*** (9.5e-06)	-3.7e-05*** (9.5e-06)
Population	-1.2e-04 (.001)	-7.2e-05 (.001)	8.6e-05 (.001)	-6.1e-05 (.001)	-5.0e-05 (9.8e-04)	-4.2e-05 (9.8e-04)	-1.57 (.001)
Skill ratio	.008** (.004)	.023** (.011)	.004 (.004)	.028*** (.010)	.008** (.004)	.016** (.007)	.006 (.004)
MIT	-.033*** (.004)	-.024*** (.006)	-.027*** (.003)	-.014*** (.005)	-.029*** (.0029)	-.024*** (.0035)	-.031*** (.0031)
Skill*MIT	-	-.022* (.013)	-	-.034*** (.011)	-	-.015** (.008)	-
Trade open.	-1.4e-04** (5.2e-05)	-5.2e-04** (7.9e-05)	-	-	-	-	-
Trade*skill	-	-2.4e-04 (1.6e-04)	-	-	-	-	-
Financial dev.	-	-	-1.3e-04*** (5.1e-05)	1.4e-04 (1.0e-04)	-	-	-
Fin. Dev.*skill	-	-	-	-7.3e-04*** (2.3e-04)	-	-	-
Fin. Dev.*MIT	-	-	-	-3.7e-04*** 1.2e-04	-	-	-
FDI	-	-	-	-	-1.9e-04 (3.9e-04)	9.7e-04 (6.3e-04)	-
FDI*Skill	-	-	-	-	-	-.005** (.002)	-
FDI*MIT	-	-	-	-	-	-.002** (9.1e-04)	-
Financial open.	-	-	-	-	-	-	-.007*** (.003)
Interaction	1.1e-04** (5.3e-05)	4.4e-04** <sup>a</sup> (2.0e-05)	-6.4e-06 (6.3e-05)	.001*** <sup>b</sup> (3.0e-04)	.0012** (.0005)	.012*** <sup>d</sup> (.003)	-.009** (.004)
Constante	-2.59*** (.445)	-2.37*** (.466)	-1.83*** (.452)	-1.43*** (.466)	-2.09*** (.445)	-2.09*** (.445)	-1.98*** (.446)
R <sup>2</sup> (within)	.36	.36	.38	.39	.36	.37	.36
Obs.	1243	1243	1045	1045	1199	1199	1212
Groups	56	56	46	46	55	55	56
Hausman test	p=.000	p=.000	p=.000	p=.000	p=.000	p=.000	p=.000

Notes : Time and country fixed effects are included; <sup>a</sup> other interactions MIT\*Trade openness and MIT\*skill ratio were included in the regression, both with positive and significant coefficients without being reported in the

Table; <sup>b</sup> other interactions MIT\*financial development and MIT\*skill ratio were included in the regression, both with negative and significant coefficients without being reported in the Table ; <sup>d</sup> Nb. years was dropped ; <sup>b</sup> other interactions MIT\*FDI and MIT\*skill ratio were included in the regression, both with significant negative coefficients without being reported in the Table.

The positive coefficient of the triple interaction term in column 2 nevertheless implies that although the growth impact of skilled labor is marginally magnified by trade openness for the countries inside the trap, it remains negative as far as magnitudes are considered (-.022 + .00044). In column 4, the signs and magnitudes of the coefficients of the double interaction Fin. Dev.\*MIT and of the triple interaction suggest that financial development inside the trap only marginally improves the impact of the skill ratio which remains strongly negative (-.034 + .001)<sup>20</sup>. As for FDI, columns 5 and 6 show that it improves growth prospects inside the trap (.0012), with this positive impact being ten times stronger for countries with larger skill ratios (.012 - .002 = .010). The estimations reported by the table 4 confirm the assumption that the gains from trade openness may be ambiguous for middle-income countries as stronger trade and financial openness both tend to deter growth prospect more seriously inside than outside the trap. In addition, skills have an opposite growth impact inside and outside the trap, respectively positive and negative. Moreover, the negative impact when the country is located in the MIT is left unaffected by intensified trade or financial development.

#### *4.3. Policy issues related to the misallocation and scissor effects*

Our findings therefore support the assumption that countries located inside the MIT may face specific difficulties to upgrade their productive capabilities and efficiently use skills, difficulties that seem not to be relieved by a relaxation of the main trade and financial constraints on microeconomic adjustments. The only exception to this pattern concerns the countries richly endowed in skills that can benefit from integration to global trade by hosting large stock of FDI. Beyond wholesale trade and financial reforms, a variety of policy issues related to productive transformation would deserve more empirical investigation. Aslund (2013) explains that MITs are the result of the conjunction of a decline in the potential for income convergence and policy failures to address this decline. Put differently, the growth potential may decline if the middle-income country maintains policies unsupportive of the creative destruction process prompting the rise of new industries. This may in turn undermine the political capacity to reform and orient policies toward productive upgrading, potentially driving the middle-income economy into a stable equilibrium featuring slow productive transformation and bad governance.

Udomsaph and Zeufack (2010) directly link the slowness of productive transformation to policy failures. They point to the risks bred by the survival, at intermediary levels of development, of policies supporting labour-intensive production through subsidies or tax incentives as they might engender policy distortions hindering market entry and risk-taking. In the same vein, Jankowska et al. (2012) define a set of ‘Productive Development Policies’ that should be used by middle-income countries to trigger structural transformation, with this set comprising public investment in the quality of education, infrastructure provision, innovation support and improved access to finance. The policies supporting productive

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<sup>20</sup> Reported estimates also show that financial development now has a positive impact on medium-run growth prospects when the countries is endowed with a higher sill ratio.

transformation and the growth regime shift therefore concern various dimensions of regulation.

These various regulations have both isolated and complementary effects on medium-run growth prospects. Moreover, they might also interact with political institutions and social policies, as recently evidenced. The combination of strong political regulation and high corruption does not necessarily impede labour-intensive industrialization and economic growth in low-income economies (Leff, 1969; Méon and Sekkat, 2005; Méon and Weill, 2010; Dreher and Gassebner, 2013). Still, shifting to more skill-intensive productions requires a selection process through which old industries are replaced by new ones. This process can be based on incentives delivered by unbiased market competition (Acemoglu et al. 2006) or by efficient incentives delivered by industrial policies (Aghion et al., 2014). In middle-income countries, the individual and social costs of corruption and red tape might eventually supersede the benefits of low taxation and informal governance of transactions supposed to grease the wheel of heavily state-regulated economies (Aslund, 2013)<sup>21</sup>.

## **5. Distributive conflicts and politics: What difference does it make?**

Distributive conflict is the fourth source of hindrance potentially inhibiting the pace of economic transformation and economic growth in middle-income countries. The slowness of productive transformation, as well as the bottlenecks they drive to, may challenge social cohesion and existing redistribution policies. The transition from lower to intermediary income levels generally creates relative dissatisfaction for those for whom well-being has not significantly improved, or has been reduced, by productive or employment sectoral changes (Ray, 2010).

When economic growth is rapid, individuals' expectations generally grow even faster than average income, and the lack of short-term opportunities for a large share of the population therefore puts heavy pressure on redistribution or protection. The effect of inequality on MIT entry has been recently tested by Egawa (2013) who provides evidence for China, Malaysia and Thailand that inequality may have prompted a growth slowdown episode after the developing country has successfully passed the first stage of extensive accumulation. It is also claimed that China and Malaysia should improve access to secondary education and implement income redistribution measures to develop high-tech industries before their demographic dividends expire<sup>22</sup>.

At middle-income levels, self-perpetuating mechanisms linking governance to social frustration can stick an economy into a growth slowdown stable equilibrium after years of sustained expansion. The failure by middle-income economy to efficiently mobilize human resources by providing their educated population with opportunities of productive or creative jobs can increase the frustration of the middle classes of urbanized educated workers of services or manufactures, whose talents (and those of their heirs) are not properly allocated by the economy and provoke higher demand for redistribution or social conflicts as recently happened in Brazil or Egypt (Campante and Chor, 2012). In middle-income countries with weakly accountable government, such political pressure can, in turn, foster fiscal deficits and

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<sup>21</sup> Nicet-Chenaf and Rougier (2014) provide evidence that although corruption had no growth effect on MENA economies, which are all located in the MIT during the period under observation, it adversely affects growth in non-MENA middle-income countries.

<sup>22</sup> Yet, since their estimation explains GDP growth and not the probability of a growth slowdown, this work is not fully informative with respect to the issues involved here.

inflation, like it did in Latin America during the 1970s, therefore triggering financial crises and subsequent growth collapses (Haggard and Kaufman, 2008). In the presence of weak institutions of conflict management, social conflicts also tend to increase the economic costs of exogenous shocks by delaying fiscal adjustment, increasing economic and political uncertainty and channelling fiscal resources towards redistribution rather than investment, therefore constraining the medium-term growth potential (Rodrik, 1999)<sup>23</sup>. In some Asian or MENA middle-income countries, the risk of political instability has driven incumbent rulers to provide socioeconomic security by increasing the degree of state regulation of the economy, albeit this policy certainly worsens the structural transformation deficit by thwarting competition and hindering the emergence of new activities. Aghion et al. (2010) have built a non-linear growth model in which high corruption prompts social distrust and, eventually, increases demand for high state regulation of the economy, with the latter increasing, in turn, corruption and trapping the country into a low-growth equilibrium.

Table 4. FE estimations of the seven year-average growth rates: MIT interactions with conflict, inequality and democracy (reference group = all non-MIT countries)

	(1) Baseline	(2) Inquality	(3) Redistr.	(4) Polity4	(5) Internal conflict	(6) External conflict
Investment	.131*** (.022)	.119*** (.022)	.123*** (.022)	.099*** (.020)	.102*** (.020)	.097*** (.020)
Investment*year	-6.7e-05*** (1.1e-05)	-6.0e-05*** (1.1e-05)	-6.3e-05*** (1.1e-05)	-5.0e-05*** (1.0e-05)	-5.2e-05*** (1.0e-05)	-4.9e-05*** (1.0e-05)
Population	.698*** (.147)	.388*** (.135)	.393*** (.145)	.325*** (.124)	.317*** (.122)	.331*** (.121)
Population*year	-3.5e-04*** (7.4e-05)	-1.9e-04*** (6.8e-05)	-2.0e-04*** (7.3e-05)	-1.6e-04*** (6.2e-05)	-1.6e-04*** (6.1e-05)	-1.7e-04*** (6.1e-05)
Secondary	2.7e-04** (1.6e-04)	3.8e-04** (1.6e-04)	3.8e-04** (1.6e-04)	3.7e-04** (1.5e-04)	4.0e-04*** (1.5e-04)	3.5e-04** (1.5e-04)
MIT	-	-.044*** (.013)	-.031*** (.004)	-.031*** (.003)	-.029*** (.003)	-.032*** (.003)
Inequality	4.7e-04*** (1.6e-04)	8.9e-05 (2.4e-04)	-	-	-	-
Redistribution	-8.1e-05 (1.8e-04)	-	-1.4e-04 (2.5e-04)	-	-	-
Democracy	8.7e-05** (4.3e-05)	-	-	-3.1e-04** (1.5e-04)	-	-
Internal conflict	-2.8e-04*** (1.6e-04)	-	-	-	5.7e-04 (5.3e-04)	-
External conflict	-.003*** (.001)	-	-	-	-	.005** (.002)
Inequality*MIT	-	3.4e-04 (2.9e-04)	-	-	-	-
Redistrib.*MIT	-	-	1.9e-04 (3.2e-04)	-	-	-
Democracy*MIT	-	-	-	7.2e-04*** (1.8e-04)	-	-
Conflict*MIT	-	-	-	-	-.002***	-.009***

<sup>23</sup> Hausmann (in Rodrik, 2003)'s analysis of the collapse of Venezuela's growth in the years 1980-1990 provides a perfect confirmation of this sequence, with the persistent inability to resolve the distributive conflicts increasing the country risk and subsequently downgrading the quality and legitimacy of public institutions.

Constant	-4.51*** (.568)	-4.09*** (.538)	-4.22*** (.540)	-3.41*** (.489)	(7.5e-04) -3.47*** (.472)	(.002) -3.50*** (.470)
Year dum.	Yes	Yes	Yes	Yes	Yes	Yes
R <sup>2</sup> (within)	.26	.26	.27	.29	.28	.29
Obs.	1096	1115	1108	1231	1229	1229
Groups	52	54	54	55	54	54
Hausman test	p=.000	p=.000	p=.000	p=.000	p=.000	p=.000

By reducing inequality and conflict over economic resources, redistribution is supposed to promote private investment by increasing socioeconomic stability. By imposing high taxation to the wealthiest, however, redistribution may also depress saving and investment rates, with adverse effects on economic growth. At country level, empirical studies have first found that redistribution effectively has either a positive (Persson and Tabellini, 1994) or an adverse effect on the latter (Perotti, 1992; Alesina and Rodrik, 1994). More recent studies tend to converge towards a positive effect, notably those conducted on more recent time periods. By using an *ex post* measure of redistribution, *i.e.* the difference between market (pre-redistribution) and net (post-redistribution), Ostry et al. (2014) have provided new evidence that 1) more unequal societies tend to redistribute more; 2) lower net inequality seems to drive faster and more durable growth for a given level of redistribution; and 3) redistribution appears generally benign in its impact on growth; only in extreme cases is there some evidence that it may have direct negative effects on growth. They conclude that “the combined direct and indirect effects of redistribution—including the growth effects of the resulting lower inequality—are, on average, pro-growth” (Ostry et al., 2014: 7). Table 4’s column 1 shows the simultaneous impact of all the dimensions discussed above and shows that the signs and significance are consistent with theory. Columns 2 and 3 test the assumption of a differentiated impact of inequality and redistribution on medium-run growth prospects inside and outside the MIT. The non-significant coefficients reported for these variables and their interaction with the MIT dummy suggest that, quite surprisingly, distributional issues do not matter to explain why some middle-income countries fall in the trap while others don’t. This would mean that growth trajectories inside and outside the MIT could not be differentiated in our sample by the underlying distribution-redistribution regime.

Other dimensions of conflict, notably civil and external conflicts, prove more helpful to discriminate between the drivers of medium-run growth inside and outside the trap. Coefficients for conflict and its interaction with MIT reported in columns 5 and 6 illustrate that conflicts are adversely related to medium-run growth prospects inside the trap while having no effect (civil conflict) or a positive effect<sup>24</sup> for the countries outside the trap. As for democracy, column 4 shows that a higher polity4 score of democracy tends to decrease medium-run growth outside the trap while increasing it for the countries inside the trap. The adverse impact of democracy outside the trap might sound counter intuitive. Still, as shown by Acemoglu et al. (2015)’s recent estimations, democratization is a long and hazardous process generally going alongside with declining growth. Their estimates show that GDP growth goes on declining or stagnating up to seven years after the transition took place.

<sup>24</sup> For a theoretical explanation of this result, see Besley and Persson (2013).

Moreover, in our sample, middle-income countries caught in the trap have higher average democracy outcomes than the countries outside the trap.

Democracy, income inequality and redistribution therefore fail to explain why some middle-income countries have slower growth than other. Conversely, direct indicators of conflict, namely civil and external conflicts, are more conducive to sustained lower growth, showing that the mechanisms of MITs are not as straightforward as suggested by descriptive assessments.

## 6. Conclusion

The definition of the MIT proposed earlier in the present paper can be extended as follows: *the MIT is a deterministic medium-run growth slowdown episode, out of the predictable convergence trajectory, signaling difficulties of transition (1) from diversification to re-specialization, (2) between two successive growth regimes and the policies supporting them, or (3) towards more inclusive institutions and policies.* These alternative explanations for the MIT have been empirically tested in this paper. The regimes of growth and of productive use of skills, the demographic dividend, the patterns of productive change and diversification, the policies related to pace of productive transformation and the use of skills and, lastly the civil and external conflicts help explain why some middle countries undergo persistent growth slowdowns. On the contrary, physical and human capital accumulation, democracy, inequality and redistribution failed to explain MITs in our sample. Our estimations could rule out some of the explanations of MITs that are frequently mentioned in the literature, while they qualify some explanations that are not frequently met, like the demographic dividend. Our estimations were not geared to make a hierarchy between the different drivers of middle-income countries' lingering growth slowdown spells. The dominant explanation for them is certainly a matter of context and of cumulative causation. This conclusion calls for additional and more fine grained empirical analyses in order to more precisely identify the underlying mechanisms pointed by our estimations in each specific context.

Still, what all MITs episodes certainly share is that the responsibility for such bad outcomes is to be found in the inadequacy of the growth regime to manage the contradictions and tensions engendered by economic development: trade integration, demographic transition, relative frustration and social conflict, rising skills and labor misallocation. Various formal and empirical analyses (Acemoglu et al., 2006; Aghion and Howitt, 2006) have shown that more competition on goods and labor markets, broader access to finance and increased investment in skills could prompt innovation as economies come closer to the technological frontier. Likewise, as shown by Ray (2010), inequality also conditions the future pace of growth and structural transformation in middle-income countries, both directly, via the channel of conflicts, and indirectly, via the political economy channel leading to a variety of redistributive policies ranging from social transfers to government provision of protection on the labour and goods markets. In middle-income countries caught in the MIT, political coalitions and institutions should therefore adapt and reform to address these crucial challenges (Doner and Schneider, 2016). All the policy dimensions addressed above are equally illustrative of the need to switch from one policy set to another one at middle-income levels.

In most of the economies trapped in the MIT, cronyism and state control over political and economic resources have eased the grabbing of key sectors (banking, energy, transport) by politically-connected elites (Wang, 2014; Faccio, 2006). Middle-East and North African middle-income economies provide a good illustration of this vicious circle as discussed by

Cammett and Diwan (2013) and Cammett et al. (2015). In a weakly accountable context, economic losers, typically low-skilled manufacturing exporting firms in middle-income countries, find it easy to politically self-organize in order to resist the policies and reforms that would have fostered such economic transformation against their short-term perceived vested interest.

Doner and Schneider (2016) have recently highlighted the political dimension of MITs by explaining how MITs can result from the perpetuation of political economies supporting inadequate policies hindering productive transformation. A fruitful avenue of research would consist in articulating the political economy of trade protection and of rent-seeking to explain MITs as stable and self-perpetuating politico-economic equilibria driving to inadequate policies with respect with productive transformation. A recent example can be found in Rougier (2016) who evidenced that the combination of redistributive policies and authoritarianism did hinder export diversification and sophistication of a sample of developing countries including various countries in the MIT over 1990-2010. The paper also explains how this impact could set up a political economy hindering any positive change towards adequate policies promoting new industries and technological upgrading. As emphasized by Doner and Schneider (2016), the political dimension behind the MIT is complex since, in the case investigated by Rougier (2016), the pattern of economic transformation can breed inadequate policies that will eventually act as a drag on it, therefore defining an inefficient policy trap. This was clearly illustrated by Esfahani and Squire (2007) showing that the significant rise of trade tariffs in the Middle East and North African region during the 1980s was due to the increased political influence of exporting manufacturing industries over policymakers that had been prompted by the decline of natural resource rents. Undoubtedly, further empirical investigation of these complementary effects would certainly help identifying and understanding the crucial policy trade-offs faced by middle-income countries. Democratization may therefore improve governance by helping tax income increase (Besley and Persson, 2013), improving governments' ability to regulate the labour market and reduce rent-seeking activities on goods markets (Cuberes and Jerzmanovsky, 2009).

Undoubtedly, political and policy mechanisms behind the MITs should deserve more attention from empirical research. Still, as they are not easy to measure adequately, we could not test them empirically as we did for the other explanations. Case studies and cross-sectional investigations should help understand how the combination of policies in different dimensions might prompt the formation of MITs in middle-income countries.

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## Appendix

**Table A1: Countries in the sample**

Europe et Amérique du Nord	Amérique Latine	Afrique du Nord Moyen Orient	Afrique Subsaharienne	Asie
Australie	Argentine	Algérie	Botswana	Corée du Sud
Autriche	Bolivie	Egypte	Burundi	Malaisie
Belgique	Brésil	Israël	Congo Brazzaville	Philippines
Danemark	Chili	Koweït	Congo Kinshasa	Singapour
Finlande	Colombie	Maroc	Gabon	Thaïlande
France	Costa Rica	Arabie Saoudite	Ghana	Inde
Grèce	Equateur	Tunisie	Kenya	Pakistan
Irlande	El Salvador		Lesotho	Sri Lanka
Italie	Guatemala		Mali	
Japon	Honduras		Sénégal	
Pays Bas	Mexico		Swaziland	
Nouvelle Zélande	Nicaragua		Zambie	
Portugal	Pérou			
Espagne	Uruguay			
Suède	Venezuela			
Suisse				
Turquie				
Royaume Uni				
Etats Unis				

**Table A2: MITs over 1960-2010: Countries and time duration (in years)**

<i>Countries</i>	<i>Years</i>	<i>Countries</i>	<i>Years</i>	<i>Countries</i>	<i>Years</i>	<i>Countries</i>	<i>Years</i>
Albania	37	Greece	27	Malaysia	33	Seychelles	35
Algeria	32	Guatemala	36	Mauritius	40	Paraguay	33
Argentina	41	Hungary	47	Mexico	32	Singapore	9
Bahreïn	39	Indonesia	19	Morocco	31	Slovenia	22
Botswana	26	Iran	40	Namibia	47	Spain	17
Brazil	50	Irak	31	Nicaragua	19	Sudan	11
Bulgaria	47	Ireland	15	Oman	43	Swaziland	40
Chile	12	Israel	12	Panama	43	Syria	48
Congo Brazz.	27	Jamaica	51	Paraguay	33	Taiwan	14
Costa Rica	38	Jordania	50	Peru	45	Thailand	20
Croatia	51	South Korea	22	Poland	38	Tunisia	36
Dominican Rep.	38	Koweit	22	Portugal	16	Turkey	38
Equator	37	Lebanon	33	Qatar	17	Uruguay	29
Egypt	31	Libya	43	Romania	39	Yemen	35
Gabon	37	Macedonia	47				
Germany	12						

Source : Authors' computations

**Table A3: List, definition and sources of the variables**

<b>Variables</b>	<b>Description</b>	<b>Source</b>
Investment	Gross Capital Formation immobilized as a percentage of GDP	World Bank
FDI	Net inflows of Foreign Direct Investment on the GDP	UNCTAD
Secondary / Tertiary Schooling	the average years of secondary schooling and average years of tertiary education <sup>a</sup>	Barro and Lee (2010)
Secondary/ Tertiary completion	Percentage of the population over 15 years who have completed secondary / tertiary education <sup>a</sup>	Barro and Lee (2010)
Democracy	Polity IV democracy index (type of executive recruitment, opening of the executive to the people, constraint on the executive and competition in political participation)	Polity IV
Investment profile	Rates the contracts' viability, profits repatriation and payment terms	ICRG
Corruption	Rates higher the absence of patronage, nepotism, reservations posts, referrals lifts and suspicious links between politicians and businessmen	ICRG
Law and order	Rates the strength and the impartiality of the legal system, and population compliance to laws	ICRG

Bureaucracy quality	Rates the ability of the state to manage conflicts and put forward efficient incentives under the form of rules and policies	ICRG
Primary / Secondary / Tertiary	Share of value added by sector (agriculture / industry / services) in GDP	UNCTAD
Diversification	Herfindahl concentration index and the Gini and Theil which measures inequality in the share of exports based	Cadot et al., 2010
Economic globalization	KOF economic globalization index including an index of discounted economic flows (FDI, trade and portfolio investments), and an index of trade and investment restrictions.	Dreher (2006)
Population growth	Annual rate of population growth	World Bank
Dependency	Proportion of inactive people per 100 persons of working age	World Bank
Credit	Domestic credit to the private sector as a share of GDP	World Bank
Internal conflicts	Scores the magnitude of civil and ethnic violence and civil and ethnic wars	Center for Systematic Peace
External conflicts	Scores the magnitude of international violent episodes and international wars that involved a country during a year	Center for Systematic Peace
LAC, MENA, SSA, EAP, SA, AE	Regional dummy variables taking the value 1 for the countries of each region and 0 otherwise (North Africa and Middle East (MENA), Sub-Saharan Africa (SSA), Latin America and Caribbean (LAC), East Asia Pacific (EAP), South Asia (SA) and Advanced Economies (European and North American countries).	Authors
1970s; 1980s; 1990s; 2000s	Dichotomous variables per decade taking the value 1 for each decade from 1970 to 2000 and	Authors
70_84; 85_95; 96_10	Dichotomous variables per period taking the value 1 for each sub periods 1970-1984; 1985-1995 and 1996 -2010	

<sup>a</sup> In order to transform Barro and Lee (2010)'s quinquennial data into annual, the same value was given for each year of the five-year interval. For example, secondary completion rates of the years 1971 to 1974 will be equal to that of 1970 and the 1976 to 1979 rate will be equal to that of 1975.

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