

# 1 Export diversification and economic growth: the case of Mauritius

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## 1.1 Introduction

The acceleration of global trade in the latter half of the 20th century has seen patterns of trade vastly differing from those predicted by classical trade theories built around perfect competition, comparative advantage and constant returns to scale (Krugman, 1980). Based on Adam Smith's concept of division of labour and specialization for economic growth and development, and the Heckscher-Ohlin Samuelson (HOS) model of international trade, countries should specialize in producing those goods in which they have a comparative advantage. Recent literature, instead, has found that countries appear to diversify in terms of production and exports as they grow.<sup>1</sup>

In most of the studies carried out, reference is made to the "concentration phenomenon", which basically consists of commodity and market concentration and which is believed to be the major contributor to instability in export revenue. It is argued that countries with commodity concentration are adversely affected by volatility in market prices through swings in foreign exchange revenues. In this regard, it has commonly been suggested that a broadening of the export base through a more diversified national trade portfolio can help in maintaining stability in export receipts, thus fostering long-term economic growth.<sup>2</sup>

In addition, it has been argued that, for poor countries to grow rich, it is important for them to modify the composition of their exports. The debates about the Prebisch-Singer hypothesis (1959) and the need for industrialization gave priority to diversifying economies away from primary commodities because of unfavourable and declining terms of trade, low value added, and slow productivity growth.

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Similarly, the Food and Agriculture Organization of the United Nations (FAO) (2004) maintains that, due to the absence of export diversification in developing countries, decline and fluctuations in export earnings have negatively influenced income, investment and employment. With diversification, investment risks are spread over a broader portfolio of economic sectors, which eventually increases income (Acemoglu and Zilibotti, 1997). Romer (1990) believes that diversification can be seen as an input factor that has an effect in improving the efficiency of other factors of production. Moreover, diversification helps countries to hedge against adverse terms of trade shocks by stabilizing export revenues. Economic growth and structural change depends upon the types of products that are being traded (Hausmann and Klinger, 2006; Hwang, 2006). Thus, through export diversification, an economy can progress towards the production and exportation of sophisticated products which may greatly contribute towards economic development. Besides, export diversification allows a government to achieve some of its macroeconomic objectives, namely sustainable economic growth, a satisfactory balance of payments situation, employment and redistribution of income.

Given the above, and in view of the focus given to export diversification in the development plans of Mauritius, the aim of the present study is to investigate the interplay between export diversification and economic growth for Mauritius in the period 1980 to 2010. The remaining parts of the chapter are structured as follows: Section II provides some stylized facts on the relationship between export diversification and economic growth. Section III discusses the empirical literature and presents some of the results obtained from the analysis undertaken for Mauritius. Finally, Section IV draws conclusions and outlines possible policy implications.

## **1.2 Export diversification and economic development: stylized facts**

It is often argued that it is not only the level of exports that leads to growth, but what also matters is the degree of diversification of such exports or of the export base. Proponents of such a view have highlighted the prevalence of the diversification aspect as a major contributor to growth. For instance, Romer (1990) has identified diversification as a production factor whilst Acemoglu and Zilibotti (1997) claim that diversification may increase income by expanding the possibilities of spreading investment risks over a wider portfolio. However, more recent literature has centered attention on examining the existence of a non-monotonic relationship between diversification and growth.

In this regard, Imbs and Wacziarg (2003), in their seminal paper, used domestic production and labour data to investigate the relationship between domestic sectoral concentration and per capita income patterns across various countries. Results of

their studies revealed the presence of a non-linear pattern between production and employment diversification and growth. Using data on sector-level employment and value added covering a wide cross-section of countries at various levels of sectoral disaggregation, they found that the process of development is characterized by two stages of diversification. In the first instance, as a result of growth, sectoral diversification increases, but beyond a certain level of per capita income, sectoral distribution of economic activity starts concentrating again. Thus, they argued, sectoral concentration follows a U-shaped pattern. Interestingly, the work by Imbs and Wacziarg (2003) raises an important question as to whether such a U-shaped pattern would hold for export diversification as well.

Indeed, Klinger and Lederman (2004) demonstrated that this was actually the case. Using disaggregated export data, the authors found that overall diversification increases at low levels of development but declines as the country matures beyond a middle-income point. In addition, Klinger and Lederman analysed the relationship between export discoveries, as measured by new export products introduced and the level of development. In that particular instance, they found that the number of new export products follows an inverted U-curve in income which indicates that, as incomes increase, economies become less concentrated and more diversified. It is only at relatively high levels of income that further growth is associated with increased specialization and less diversification.

Furthermore, Cadot, Carrère and Strauss-Kahn (2011a) derived and revisited a decomposition of Theil's concentration index that maps directly into the extensive and intensive (new products or new markets) margins of export diversification. In order to analyse how the two margins evolve as functions of GDP per capita, they constructed a very large database covering 156 countries. And they also found a hump-shaped (inverted U-shaped) relationship between economic development and export diversification, similar to the findings of Klinger and Lederman (2004).

In the present analysis, we use some of the insights from the above to discuss the link between export diversification and growth in the case of an island economy, namely Mauritius. Despite being a small island with a relatively limited endowment of productive resources, Mauritius, it could be argued, has been able to transform itself from a low-income mono-crop economy to a middle-income country, and is now one of the most successful countries in the African region. Due to its former colonial ties, Mauritius has been able to greatly benefit from the EU's Sugar Protocol since the 1970s. However, the country's exports were heavily concentrated in the sugar and, to a lesser extent, the textile and garment sectors. As illustrated in Table 1, together the two sectors accounted for approximately 86 per cent of total exports. However, what successive governments and local investors have successfully managed to achieve over the years has been the gradual diversification of their investment into other, higher value-added sectors.

**Table 1** Share of total exports, 1980-2010 (per cent)

Areas	1980	1990	1995	2000	2007	2008	2009	2010
Food and live animals	-	-	-	-	15.13	13.09	14.37	14.20
Cane sugar	68.87	29.68	24.88	8.31	7.37	5.87	5.28	5.25
Fish and fish preparations	1.33	0.92	2.58	1.44	6.29	5.63	6.97	6.94
Miscellaneous manufactured goods	0.00	0.00	0.00	0.00	24.60	19.94	21.41	20.05
Articles of apparel and clothing accessories	17.99	52.34	55.29	37.12	21.23	16.96	18.05	16.31
Jewellery, goldsmiths' and silversmiths' wares	0.00	0.94	0.98	0.97	0.78	0.78	0.97	1.41
Ships' stores and bunkers	0.00	3.24	2.24	2.71	4.19	6.35	4.26	5.15
<b>Total exports of commodities</b>	<b>100.00</b>	<b>100.00</b>	<b>100.00</b>	<b>57.85</b>	<b>53.64</b>	<b>48.22</b>	<b>47.66</b>	<b>47.37</b>
Transportation	0.00	0.00	0.00	8.79	9.83	9.35	9.07	7.35
Passenger	0.00	0.00	0.00	0.00	8.15	7.78	7.39	5.89
Freight	0.00	0.00	0.00	0.00	0.55	0.61	0.56	0.51
Travel	0.00	0.00	0.00	21.32	27.89	30.58	28.81	25.38
Business	0.00	0.00	0.00	0.00	9.92	10.68	10.17	8.61
Personal	0.00	0.00	0.00	0.00	17.97	19.90	18.65	16.77
ICT	0.00	0.00	0.00	0.74	1.31	1.89	1.92	2.00
Other services	0.00	0.00	0.00	11.30	7.33	9.96	12.54	17.90
<b>Total exports of services</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>42.15</b>	<b>46.36</b>	<b>51.78</b>	<b>52.34</b>	<b>52.63</b>
<b>Total exports</b>	<b>100.00</b>							

Source: Central Statistical Office.

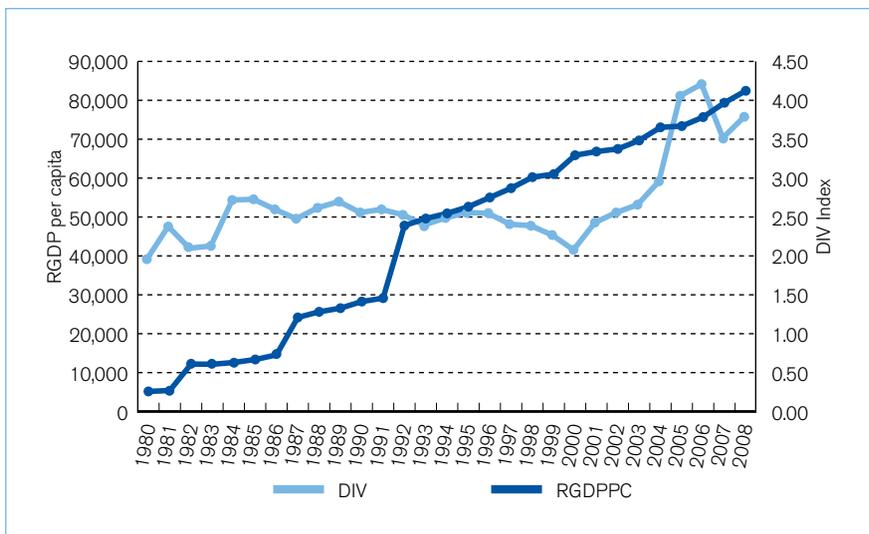
With the ever-decreasing preferential treatment being accorded to ACP (African, Caribbean and Pacific Group of States) and developing countries, as a result of GATT in the first instance and the WTO since 1995, a sustained reliance on the sugar and garment sectors as the only drivers of export growth would have seriously undermined the island's GDP growth potential. Instead, with private investment derived from monies obtained from the sugar prices boom in the 1980s, coupled with the thoughtful and forward-looking government strategies (geared towards major investment in education and infrastructure), Mauritius has been able to successfully move from an overtly export-dependent economy to a relatively well-diversified one, with the tourism and services sectors emerging as major contributors to export growth. Figures for the last two decades bear testimony to such an analogy. Nonetheless, the Government has also been striving to consolidate the existing traditional base with measures being adopted to encourage the restructuring and modernization of the textile and sugar sectors.

Finally, over the last few years, policies geared towards the promotion of new sectors which include, amongst others, land-based oceanic activities, hospitality and property development, healthcare and biomedical activities, and the knowledge hub, have been promulgated. These would, without any doubt, only serve to diversify and expand the export base. Indeed, the success of the Mauritian economy can be largely attributed to the country’s policy of trade openness, given its small domestic market. In this regard, the local economy has been growing almost consistently at an average of 5 per cent since its independence, GDP per capita rising from US\$ 260<sup>3</sup> in 1968 to US\$ 6,000 in 2011.

The positive relationship between export diversification and growth in Mauritius is depicted in Figure 1, where export diversification is reflected by the inverse of the Herfindahl index.<sup>4</sup>

Figure 1 shows that GDP per capita in Mauritius has been positively correlated with export diversification. While export diversification kept on fluctuating (as shown per the Herfindahl index), economic growth increased steadily over the entire sample period. In short, Mauritius has seen an increase in diversification together with an increase in real GDP per capita over the three decades or so. The fact that diversification is still trending upwards indicates that Mauritius has not reached the level of diversification of mature economies.<sup>5</sup>

**Figure 1** Evolution of export diversification and real GDP per capita in Mauritius, 1980–2008



Source: Authors’ computation.

### 1.3 Export diversification and economic growth

One of the main advantages of export diversification which has been put forward by economists is that it tends to increase economic growth in the host economy. There are two essential questions that the literature on the relationship between export diversification and economic growth has tried to answer: first, does export diversification affect long run economic growth? And secondly, can a country boost its economic performance by diversifying its exports?

A number of empirical studies have shown that export diversification is contributing to higher per capita income growth. Love (1986), for example, suggested that a country should avoid heavy dependence on limited products since it diminishes the state's potential to partially offset fluctuations in some export sectors with sectors in which stability prevails. Love concluded that export diversification is a useful strategy to reduce instability and should not be restricted only to those sectors outside agriculture.

In addition, Gutiérrez de Piñeres and Ferrantino (2000), in their study of Latin American countries, found that there was a positive interplay between export diversification and economic growth. Some examples of countries that experienced considerable diversification of their exports and a fairly strong growth performance were Chile, Colombia, El Salvador, Paraguay, the Plurinational State of Bolivia and Uruguay. Similar results were also uncovered by Balaguer and Cantavella-Jordá (2004) with respect to Spain, and Hammouda et al. (2006) with respect to African countries.

Interestingly, the findings of Greenaway, Morgan and Wright (1999) showed that not only export growth led to economic growth, but export composition also mattered. Their study also supported the view that there were greater externalities attached to the manufacturing sector when compared with other sectors. Such externalities may lead to horizontal diversification and advancement in the capacity of all industries to face foreign competition (Matthee and Naudé, 2007). Moreover, it could also be argued that the proportion of secondary sector exports in total exports is a satisfactory indicator of the extent to which a country is successful in building up forward linkages and diminishes its reliance on the primary sector. In this light, Levin and Raut (1997), for instance, concluded that there may be a positive and considerable impact on economic growth when a country's total exports consist of a higher proportion of manufactured exports.

The relationship between a country's productivity and its sectoral export variety was also studied by Feenstra and Kee (2004). In a sample of 34 countries for the period 1984 to 1997, they found that a 10 per cent boost in export diversity in all industries resulted in 1.3 per cent growth in a country's productivity. Furthermore, Herzer and Nowak-Lehmann (2006) analysed the hypothesis that there is a relationship between export diversification and economic growth through externalities of learning-by-doing and learning-by-exporting in the case of Chile, and found that economic growth was positively influenced by both horizontal and vertical export diversification.

However, the posited positive relationship between export diversification and growth is not always revealed in the literature. Michaely (1977), for example, found a positive and significant link between exports and economic growth only among the more-developed economies. But this was not the case among least-developed countries. He suggested that a certain minimum level of development is necessary for exports to impact on growth in an economy.

The time series analysis by Gutiérrez de Piñeres and Ferrantino (2000) showed no evidence supporting diversification-induced growth in Chile and Colombia, contrary to their analysis of panel data. Export diversification was not found to be a source of economic growth. Similarly, no support was found for this hypothesis during the period of rapid growth in Chinese Taipei (1971–1995) in the study carried out by Chang et al. (2000). Finally, Sharma and Panagiotidis (2005) tested the export-led growth hypothesis in the case of India using diverse approaches and their findings tended to reinforce the arguments against the export-led growth hypothesis.

It is obvious from the above that quantitative methods exist that allow for the examination of a dynamic relationship between export diversification and growth. For the purpose of this chapter, a dynamic time series framework has been applied in the case of Mauritius and covering the period 1980 to 2010.<sup>6</sup> The framework makes it possible to analyse both the short- and the long-run relationship between diversification and growth. The use of such a framework also makes it possible to discuss potential causality and indirect effects.

The findings from the empirical exercise reveal a positive relationship between export diversification and economic growth for Mauritius in both the short run and the long run. In the long run, a 1 per cent increase in diversification will lead to a 0.11 per cent increase in real GDP (see Table 2). Domestic investment, trade openness, human capital and foreign direct investment (FDI) are also found to significantly contribute to economic performance in the long run.<sup>7</sup>

**Table 2** Long-run relationships (estimated co-integration vector)

Variable	coefficient	t-ratios
Real GDP	1	
Concentration	-0.11***	5.58
Openness	0.39**	2.08
Secondary enrolment ratio	0.29*	1.78
FDI	0.18**	2.22
Gross domestic fixed capital formation	0.65***	3.23

Source: Authors' calculations.

Note: Variables have been used in logs in the regressions.

The estimation of so-called “error correction terms” allows us to analyse the speed of the economy's adjustment to the long-run equilibrium. We find that, in the short run, a 1 per cent increase in export diversification leads to a 0.09 per cent increase in GDP. This implies that the impact of export diversification on economic growth is weaker in the short run than in the long run. The adjustment will, however, not take long, notably because economic growth is also found to contribute to increased diversification. In addition, openness, human capital and FDI are found to favour export diversification.<sup>8</sup>

## 1.4 Conclusions and policy recommendations

Although it is widely accepted that substantial benefits could be engendered through export diversification, and although we have witnessed a fair degree of liberalization in the area of export, it could be argued that certain barriers which limit export diversification, especially in LDCs, are still present. Such deterrent factors include low elasticity of demand, lack of finance, bureaucracy, barriers to market entry, inadequate infrastructure and lack of skilled manpower. In addition, the World Bank, for instance, has noted that the weakness of public institutions hampers private sector activities, this weakness taking the form of a weakening of sound policy-making and public management, frustration of private entrepreneurship, prevention of competition, and increasing corruption due to heavy regulatory and legal systems and loss-making state-owned business. Similarly, private investment can be deterred because of poorly regulated and undercapitalized commercial banks, and problems in telecommunications and infrastructure, and law and order problems.

The above clearly points to the pivotal role that the state may play, through the adoption of the right policies, in fostering the diversification of the country's export base. For example, as purported by the endogenous growth model, exports may be

diversified through learning-by-doing and learning-by-exporting and by adopting the practices of developed countries (Gutiérrez de Piñeres and Ferrantino, 1997). Consequently, the role of the state, in promoting the financial sector and in boosting the level of FDI inflows through the provision of appropriate incentives, should not be understated.

Furthermore, Hammouda et al. (2006) argued that pursuing economic and non-economic policies that lead to exports and product diversification may, to a large extent, help overcome the growth constraints emanating from factor accumulation. Given this, they reasoned that African countries should aim at raising their levels of investment, improving governance, eliminating conflicts, adopting non-conservative fiscal policies and ensuring macroeconomic stability, in addition to the pursuance of industrial and trade policies which foster economic diversification. The adoption of such policies can only serve to enhance export diversification, which will in turn lead to a greater contribution of TFP to economic growth.

In addition, the promotion of export diversification could also be achieved through the provision of incentives which improve trade facilitation by setting policy measures to reduce costs. This is because export diversification is rather sensitive to cost. Such measures include lowering domestic barriers to entry, facilitating company registration by reducing the number of procedures and applying a fixed registration fee, and removing the need for pre-tax payments.

Finally, investment could and should be made in research and development (R&D) activities that enhance the current status of firms, especially in terms of technology, and which may enhance their ability to expand a country's export base. However, since these R&D and technological innovation activities are normally stimulated through fiscal and financial incentives, it is crucial that such accompanying measures are provided to those firms which are investing in new technologies and R&D activities.

Interestingly, it could be argued that the positive link found between export diversification and growth in Mauritius in the present study is very much the result of sound government policies (discussed in section II) which have served to create a conducive environment for the private sector to operate in and accordingly diversify its export base, both across differing industries and within the same sector.

However, although it is safe to advance the proposition that Mauritius has performed tremendously well since the 1980s, recent global events may, unfortunately, have a negative bearing on any future growth expectations unless appropriate measures and policies are devised and adopted. The negative repercussions of the 2008 financial crisis are already being felt. Decreasing tourism arrivals and the resulting

fall in related local sector activities have already been witnessed. Unfortunately, this is not the only challenge. The guaranteed sugar quota from the EU is due to end soon, and it is obvious that Mauritius will not be able to compete with countries such as Brazil. Given this, the following measures are proposed:

- There should be further consolidation of the island's traditional sectors with greater emphasis still being placed on the production of higher-value-added products, which entails investment in modernizing the technology base for these sectors.
- The current financial crisis has served to highlight the island's overreliance on the traditional tourism markets. For this reason, it is proposed that the Government embark on an intensive marketing campaign to foster demand for our tourism products from other regions, particularly from emerging economies and the BRICs.
- Mauritius has always been at the forefront of the various regional initiatives of which it is a member. Accordingly, it is proposed that measures geared towards the identification of new regional export markets be undertaken. This may be achieved through the signing of bilateral treaties and regional trade agreements with member countries, which would undoubtedly serve to expand our trade in goods and services. In a similar vein, the government should closely work with its regional counterparts to streamline the administrative requirements and the number of NTMs prevailing in the region to increase market access by and to member countries.
- Mauritius possesses some undeniable location advantages in the form of political stability, infrastructure comparable to that of some emerging economies in East Asia, a streamlined tax regime and various double taxation agreements (DTAs) with several countries. These, coupled with the ever-increasing interest being shown by foreign investors from Europe and East Asia, offer an excellent opportunity for the Government to market the country as a platform for reinvestment in the region.
- Although the Mauritian offshore sector has had quite remarkable success since its inception, it has, unfortunately, relied extensively on the DTA with India which accords preferential treatment to offshore companies which establish operations in Mauritius. However, there has been increasing pressure from the Indian Government over the last couple of years for a review of such a treaty, given that government's supposed losses in tax revenues. To mitigate any potential negative impact that such a change in the DTA may have, it is proposed that the Government, together with the private sector, invest in the training of personnel for high-value services which would serve to increase the substance of offshore operations.

## Endnotes

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1. Please see Imbs, J., and R. Wacziarg (2003) and Cadot, Carrère and Strauss-Kahn (2011a) amongst others.
2. Refer to Meilak (2008); Loayza et al. (2007); World Bank (1999); Ghosh and Ostry (1994); and Bleaney and Greenaway (2001) amongst others.
3. The figures are calculated on the basis that \$1 approximates MUR 30.
4. The Herfindahl index is a measure for concentration that takes values between 0 and 1, with higher values indicating higher degrees of concentration. The inverse of the index therefore is higher, the more diverse are exports.
5. See the discussion on the findings of Klinger and Lederman (2004) above.
6. To be more precise, a Vector Autoregressive (VAR) model has been employed. This approach does not impose a priori restrictions on the dynamic relations among the different variables. It resembles simultaneous equation modeling in that several endogenous variables are considered together.
7. For the more detailed and technical discussions, please refer to the paper presented by the authors at the DAAD Workshop, "Perspectives of Emerging Markets", held in Mauritius in June 2012.
8. This is in line with the findings in Cadot, Carrère and Strauss-Kahn (2011b).

## Bibliography

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- Acemoglu, D. and F. Zilibotti (1997), "Was Prometheus unbound by chance? Risk diversification and growth", *Journal of Political Economy* 105(4): 709-751.
- Balaguer, J. and M. Cantavella-Jordá (2004), "Structural change in exports and economic growth: Cointegration and causality analysis for Spain (1961-2000)", *Applied Economics* 36(5): 473-477.
- Bleaney, M. and D. Greenaway (2001), "The impact of terms of trade and real exchange rate on investment and growth in sub-Saharan Africa", *Journal of Development Economics* 65(2): 491-500.
- Cadot, O., C. Carrère and V. Strauss-Kahn (2011a), "Export diversification: What's behind the hump?", *The Review of Economics and Statistics* 93(2): 590-605.
- Cadot, O., C. Carrère and V. Strauss-Kahn (2011b), "Trade diversification: Drivers and impacts", in M. Jansen, R. Peters and J. M. Salazar-Xirinachs (Eds.), *Trade and employment: From myths to facts*, Geneva, International Labour Office.
- Chang, T., W. Fang, W. Liu, and H. Thompson (2000). "Exports, imports and income in Taiwan: An examination of the export-led growth hypothesis", *International Economic Journal* 14(2): 151-60.

- Feenstra, R. C. and H. L. Kee (2004), *Export variety and country productivity*, Cambridge, MA, National Bureau for Economic Research, NBER Working Paper 10830.
- Food and Agriculture Organization of the United Nations (FAO) (2004), *The state of agricultural commodity markets 2004*, Rome.
- Ghosh, A. R. and J. D. Ostry (1994), *Export instability and the external balance in developing countries*, Washington, DC, International Monetary Fund, IMF Working Paper No. 94/8.
- Greenaway, D., W. Morgan and P. Wright (1999), "Exports, export composition and growth", *Journal of International Trade and Development* 8(1): 41-51.
- Gutiérrez-de-Piñeres, S. A. and M. Ferrantino (1997), "Export diversification and structural dynamics in the growth process: The case of Chile", *Journal of Development Economics* 52(2): 375-391.
- Gutiérrez-de-Piñeres, S. A. and M. Ferrantino (2000), *Export dynamics and economic growth in Latin America: A comparative perspective*, Burlington, VT, Ashgate.
- Hammouda, H. B. et al. (2006), *Diversification: Towards a new paradigm for Africa's development*, Addis Ababa, United Nations Economic Commission for Africa, African Trade Policy Centre, ATPC Work in Progress No. 35.
- Hausmann, R. and B. Klinger (2006), *Structural transformation and patterns of comparative advantage in the product space*, Cambridge, MA, Center for International Development at Harvard University, CID Working Paper No. 128.
- Herzer, D. and F. Nowak-Lehmann (2006), "What does export diversification do for growth? An econometric analysis", *Applied Economics* 38(15): 1825-1838.
- Hwang, J. (2006), *Introduction of new goods, convergence and growth*, Cambridge, MA, Harvard University Job Market Paper.
- Imbs, J. and R. Wacziarg (2003), "Stages of diversification", *American Economic Review* (93)1: 63-86.
- Klinger, B. and D. Lederman (2004), *Discovery and development: An empirical exploration of "new" products*, Washington, DC, World Bank Policy Research Working Paper 3450.
- Krugman, P. (1980), "Scale economies, product differentiation, and the pattern of trade", *American Economic Review* (70)5: 950-959.
- Levin, A. and L. K. Raut (1997), "Complementarities between exports and human capital in economic growth: Evidence from the semi-industrialized countries", *Economic Development and Cultural Change* 46(1): 155-174.
- Loayza, N., et al. (2007), "Macroeconomic volatility and welfare in developing countries: An introduction", *World Bank Economic Review* 21(3): 343-357.
- Love, J. (1986), "Commodity concentration and export earnings instability: A shift from cross-section to time series analysis", *Journal of Development Economics* (24)2: 239-248.

Matthee, M. and W. A. Naudé (2007), *The determinants of regional manufactured exports from a developing country*, Helsinki, United Nations University, World Institute for Development Economics Research (UN-WIDER), WIDER Research Paper No. 2007/10.

Meilak, C. (2008), "Measuring export concentration: The implications for small states", *Bank of Valletta Review* (37): 35-48.

Michaely, M. (1977), "Exports and growth", *Journal of Development Economics* (4)1: 49-53.

Romer, P. M. (1990), "Endogenous technological change", *Journal of Political Economy* (98)5: 71-102.

Sharma, A. and T. Panagiotidis (2005), "An analysis of exports and growth in India: Cointegration and causality evidence (1971-2001)", *Review of Development Economics* (9)2: 232-248.

World Bank (1999), *Dealing with commodity price volatility in developing countries: A proposal for a market-based approach*, Paper for the Roundtable on Commodity Risk Management in Developing Countries, Washington, DC.

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