Does Import Substitution Industrialisation Strategy Hurt Growth?: New Evidence from Brazil and South Africa

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Abstract

More economies have sprung up through home-grown import substitution industrialisation (ISI) strategy in the developing world as compared to those that have plummeted by adopting the prescripts of the Washington Consensus. The recurring economic and financial crises, essentially the 2008/2009 experiences, present another perspective for macroeconomic policy embracement. For instance, major economies, especially those of the United States and the countries in the European Union, jettisoned their neoliberal ideology for protectionist measures in dealing with the 2008/2009 financial and economic turbulence. This lends credence to a rethink of macroeconomic policies for the less developed and developing economies. Using data generated from the World Development Indicators (WDI), an organ of the World Bank, in regression analyses, this article argues that the macroeconomic policy of import-substitution industrialisation contributed to the current economic developments in Brazil and South Africa. The article suggests that an import-substitution industrialisation policy is not only appropriate to galvanise industrialisation in less industrialised economies, but also augments a sustainable economic growth.

Introduction

More economies have sprung up through home-grown import substitution industrialisation (ISI) strategy in the developing world as compared to those that have plummeted for adopting the prescripts of the Washington

Consensus.[1] The financial economic crises witnessed in recent times have superseded the debacles of the 1930s, which precipitated the establishment of the institutions of the Washington Consensus. The increasing incidence of market failures and the need for 'bail outs' or 'rescue packages' continue to dominate open discourse about the appropriateness of strategic prescriptions ordained by these institutions in combating situational tumults. This agitation is further compounded by the postulation by the Bretton Woods initiatives[2] that the underdevelopment of many developing countries (including some African, Asian and Latin American countries) was precipitated by the inappropriateness of the home-grown macroeconomic policies adopted by most developing countries in the early days of their economic histories (Helleiner, 2002). The institutions of the Washington Consensus criticise the developing countries for wrestling against the free-market economic system when they should have embraced it. According to these institutions, developing countries would have been better developed if they had fully adopted the neoliberal policy prescript suggested to them (Easterly, 2007).

However, evidence suggests that the policy misjudgement of these institutions was the culprit of the Asian currency crisis of 1997, the Argentine economic crisis of 1999, and Malawi's bad experience with agricultural subsidies. The recent financial crises in the United States and Euro zone, amongst others, attest to the inexorability of these institutions in regards to policy misjudgements. Ironically, the self-defeating outcomes of these policies are not considered sufficient to rework the modules of the blanket 'developmental' policy agenda advanced by the institutions. The critique that developing countries remain so because of their negativity towards the prescribed developmental ideology (UNIDO, 1988) is misleading. For example, Brazil and South Africa

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[1] John Williamson coined the term 'Washington Consensus' in 1989 to describe a set of 10 specific economic policy prescriptions that he considered should constitute the 'standard' reform package promoted for crisis-wracked developing countries by Washington, DC-based institutions such as the International Monetary Fund (IMF), the World Bank, and the US Treasury Department. Nowadays, the term is commonly used in a broader sense to denote market fundamentalism. The term has become associated with neoliberal policies in general and it has been drawn into the broader debate on the expanding role of the free market, constraints upon the state and US influence on other countries' national sovereignty (Washington consensus, 2010).

[2] The Bretton Woods system of monetary management was established in 1944 to rebuild the international economic system during World War II by 730 delegates from all 44 Allied nations, at the Mount Washington Hotel in Bretton Woods, New Hampshire, USA. The global monetary initiative was created to set up a system of rules, institutions and procedures to regulate the international monetary system. The agreement led to the creation of the IMF and the International Bank for Reconstruction and Development (IBRD) – now the World Bank Group (Hough & Neuland 2007).

share similar economic histories since the early 1920s, up until the political emancipation of South Africa in the early 1990s. These chronicles precipitated the introduction of a series of intervention mechanisms, including the import-substitution approach as an international trade strategy towards economic recovery and economic self-reliance. Having reached a threshold that was considered capable of supporting exportation through the import-substitution industrialisation (ISI) (De Souza, Burlamaqui and Barbosa-Filho, 2005), the two countries adopted an export-promotion strategy to leverage the competitive advantages derived from the ISI strategy.

This article is based on the premise of Mill's 'method of agreement' (Orloff and Skocpol, 1984; Stepan, 1985), a postulation that explains the logic behind two developing economies with different location-specific advantages, natural cultural heritage, and geopolitical attributes, experiencing similar economic histories, with similar consequences. Both Brazil and South Africa were confronted with similar economic challenges at different times, adopted similar macroeconomic policies and recorded 'similar' outcomes. The latter part of the article reverts to the 'method of difference' (Mill's second proposition), a converse analogue in which the economic experience of these nations varied at a later stage.[3] While previous studies (Waterbury, 1983; Juarez, 1992; Cason and White, 1998; De Souza, Burlamaqui and Barbosa-Filho, 2005) looked at the implication of ISI from political perspective, this article examines the socioeconomic and political implications of ISI on comparative basis. Also, the previous work done by Cason and White (1998) adopted Mill's 'method of agreement' to explain the implication of ISI policy between Brazil and Tunisia, that study did not relate the past to the present through a combination of the two Mill's theories, which forms a part of this research. More importantly, the work done by Wagner (1981) and the one done by Cason and White (1998) were exploratory in nature. This research uses econometric techniques to establish reliable and scientific piece of evidence on the real implications of ISI policy on a number of measurable indicators of socioeconomic and political outcomes of ISI in Brazil and in South Africa.

This article is informed by the Western idiosyncrasy that the underdevelopment of both African and Latin American countries was grounded on the adoption of the ISI strategy, initiated by these two geographies, at a time when other regions embraced export promotion (Cason and White, 1998). Using autoregressive models and a series of econometric error correction tests, this article investigates whether the adoption of the ISI strategy did work in favour of

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[3] Currently, Brazil is a rapidly growing economy, a pace that the South African economy is lagging behind to meet.

these countries, and prepared them towards the adoption of export promotion that followed later (Juarez, 1992; Waterbury, 1983). It further investigates whether the criticism of the institutions of Washington Consensus on the adoption of protectionist measures by the developing countries was justifiable. Using policy and socioeconomic indicators such as the GDP per capita at purchasing power parity level, imports, inflation, national reserves, exports and current account balance, this article investigates the effects of ISI policy on the industrialisation process of Brazil and South Africa. Although, it must be acknowledged that larger percentage of people lives in the rural areas in the developing countries, this status quo was reversed in both countries during the ISI era, and the economic growth that ISI commingled furthered rural-urban migration in these economies, which also helps in the drive towards poverty alleviation.

A Brief overview of Brazil

When the political rivalry between Portugal and Brazil became heated, and the fear of annexation gripped the Pedro monarchy, Pedro 1 declared Brazil's independence in 1822 and became the constitutional emperor. Today, Brazil is the world's fifth-largest country by geographical coverage, with a land area that extends over 8.5 million square kilometres, occupying 47% (almost half) of the total land area of Latin America (Brazilian Government, c2005). The country is home to about 197 million people. Eighty-three per cent of the total population lives in the cities, with a moderate level of visible divide between countryside and cities (EIU, 2010).

As one of the ten largest economies in the world, the country has a diversified middle-income economy with wide variations in development levels and flourishing manufacturing, mining and agriculture sectors (Brazilian Government, c2005). With the new waves of globalisation, technology and services sectors are also contributing more meaningfully to the country's gross domestic product (GDP) (IMF, 2008). Brazil is a country with a balance of trade surplus (amounting to a record US$33.6 billion in 2004), aided by its historical economic policies (WTO, 2007). The country is one of the group of five emerging economies (Brazil, Russia, India, China and South Africa – BRICS) – a status that depicts its rapid economic development.

Given its economic prowess in the region, Brazil accounts for three-fifths of the South American economy's industrial production, with a GDP per capita of more than US$ 11 000 (EIU, 2010). As a high-income developing country, coupled with its market capacity, Brazil's foreign direct investment (FDI) stock as a percentage of fixed capital formation increased from 9.6% over 1990

and 2000 to 10.5% in 2006 (UNCTAD, 2007). The country is a member of the Southern Common Market (MERCOSUR), G-22 and the CAIRNS Group,[4] and it trades with more than a hundred countries (mainly the European Union (EU), representing 26% of the balance; the USA, 24%; MERCOSUR and Latin America, 21%; and Asia, 12% (Brazilian Government, c2005). Brazil has an average of 7.5% unemployed population in 2010 (EIU, 2010), and despite former President Lula Da Silver's poverty alleviation programme entitled 'territories of citizenship' – a sustained social agenda designed to reduce poverty among the rural poor in 2007 (Duffy, 2008) – poverty remains a (relatively minor) social problem in the country.

A Brief Overview of South Africa

The Union of South Africa was created on May 31, 1910. The country became a sovereign state within British Empire in 1934, and later attained a status of republic on May 31, 1961. South Africa's land mass of about 471 000 square kilometres suggests that the country is the largest country in the Southern Africa region. The country is home to about 48 million people and more than 40% of the total population lives in the rural areas (Statistics South Africa, 2009; Van Niekerk and Kopelman, 2005). South Africa has the largest and most diversified economy in Africa. The country contributes about 20% of the total African GDP. It contributes one-third of the sub-Saharan African and about two-thirds of the SADC[5] region's GDP (Aregbeshola and Palmer, 2007). As an upper-income developing country, the country's GDP per capita was estimated to have reached US$ 10 739 in 2010 (EIU, 2010). South Africa is a country that is richly endowed with natural resources, and undoubtedly, a source of varied natural commodity in Africa (UNCTAD, 2006). While the country's banking and manufacturing industries are increasingly becoming globally competitive (CREFSA, 2005), its economic strength still lies in the primary sector (UNCTAD, 2008).

The wide economic base of the country reflects in the content of FDI that the country attracts. For example, the EU has important investments in South Africa's automobile industry, as have China and Britain in the country's capital market. The EU remains South Africa's most important economic trade

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[4] The Cairns Group is a coalition of 19 agricultural exporting countries. It is a diverse coalition that brings together developed and developing countries from Latin America, Africa and the Asia-Pacific regions.

[5] The Southern African Development Community (SADC) is a regional trade bloc comprising 14 Southern African countries.

partner, under the auspices of the Trade, Development and Cooperation Agreement (TDCA) – a bilateral trade agreement signed and ratified by the EU 15 in 2004 (Hough and Neuland, 2007). The country is also a power broker in all the Southern Africa regional groupings to which it belongs.

Theoretical Framework of Import-substitution Industrialisation

According to Hill (2011), there is a relationship between an increase in per capita income and an increase in productivity of the manufacturing sector. Historical studies also suggest a considerable causality between a rise in industrial productivity and economic growth (Rostow, 1956). The anticipated gains of industrialisation prompt its recommendation to developing countries by the institutions of global trade and finance (Richardson, 1990; Hill, 2011). However, judging from the colonisation experience, governments of the developing countries (especially those in Africa and Latin America), were reticent to adopt those neoliberal policies that were recommended. As a result, governments of these countries adopted home-grown economic policies, such as the ISI strategy, as a means to achieving growth and self-reliance.

The adoption of ISI is primed on the assumption that greater industrialisation creates greater wealth (Linder, 1961). Some classical economists have established a correlation between an increase in per capita income and the level of industrialisation of a nation (Knox, Agnew and McCarthy, 2003; Peng, 2009). It is argued that the per capita income of a country increases as more of the citizens engage in manufacturing activities (Todaro and Smith, 2009). The assertion that countries can only lose their underdevelopment status through improved industrialisation (Davis, 1994) motivated some of the developing economies to adopt ISI. In addition, the theory of economies of scale postulates that an increase in the market size will lower the cost of production (Knox et al., 2003; Meyer, 2004). This scenario supports the adoption of an import-substitution strategy, as the domestic products are considered cheaper than imports. Further, an increase in market size affects output indirectly as other sectors of the economy demand for intermediates to advance production (Chenery, 1960; Richardson, 1990).

The general endeavour to achieve the most suitable economic policy in an economy is informed by the argument that a good policy is synonymous with economic peacefulness. Although creating a good policy may not create a development miracle, it can avert the devastating effects that characterise bad policies (Moritz, 1994; Rodrick, 1992). While the advocates of free trade (Bhagwati, 1988; Cairncross, 1962; Krueger, 1972) refer to the development of

the four tigers[6] as a reinforcement for export-promotion policies, adversaries of the free-trade agenda (Gittelman 1988; Nurkse, 1961; Prebisch, 1959) attribute the same success to structuralist interventionism (Davis, 1994). Given that the ISI strategy is an inward-looking policy that emphasises home-grown development initiative, it safeguards a country's destiny (Rodrick 1992; Streeten 1973). This policy canvasses 'learning by doing' in a way that synergises manufacturing and technological innovations (Sikkink, 1991). The main substance of ISI strategy focuses mainly on two outcomes, namely to provide local substitutes for simple consumer foreign imports and to produce local substitutes for more sophisticated high-technology imports.

This is achieved through the erection of economic barriers facilitated by bureaucratic measures in the form of trade restrictions (Shikida, 2005). This results in 'balanced growth', as industrial diversification is achieved (Todaro and Smith, 2009). Furthermore, ISI is an intervention mechanism to arrest external imbalance, such as trade deficit, which may arise from imbalanced macroeconomic policy. To combat trade deficit, governments adopt intervention mechanisms such as trade restrictions, which are in themselves, ISI strategies (Shikida, 2005). Notable among these measures are currency devaluation, differentiated exchange rates, import licence policies and customs tariffs. However, the imbalances created by this rent-seeking activity has been criticised for being cyclical in nature (Helleiner, 2002).

The Fundamentals of ISI in the Developing Economies

World War I was characterised by low manufacturing of consumer goods as the developed countries diverted resources to the manufacturing of war equipment (Kindleberger, 1989; Mishkin 2007). This, coupled with the high price of consumer goods, compelled some developing countries to explore alternative strategies capable of reducing their reliance on imports from developed countries. Further, the Prebisch-Singer thesis, which postulates a continued decline in primary commodity prices – the main exports of developing nations – reinforces the need for mineral beneficiation (Todaro and Smith, 2009).

The theory of market imperfection also justifies government intervention in the regulation of production and other economic activities through the macroeconomic instruments of the state (Richardson, 1990; Hill, 2011), not only to achieve economic growth but also to score political favouritism (Shikida, 2005). ISI was mostly favoured to prevent domestic demand from leaking abroad,

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[6] The four tigers are the four Asian economic giants, namely Hong Kong, Taiwan, South Korea and Singapore. They are also known as 'Asia's four little dragons' in Chinese.

thereby keeping savings and fiscal revenues at home to finance domestic investment and government expenditure (Bhagwati, 1988; Blomstrom and Hettne, 1984). In practice, rent-seeking activities can impose large costs on an economy, especially considering the time taken to reap the proceeds of such a policy (Wagner, 1981).

The increasing number and effects of market failures between 2008 and 2009 have furthered the argument in support of protectionism. Evidence suggests that trade barriers is one of the quick antidotes applied by the big markets to avert an absolute economic meltdown during economic recession (Miller and Holmes, 2010). Governments tend to protect home markets from imports in order to boost productivity and create jobs, and also in order to achieve macroeconomic stability. This approach was well documented in the United States and the United Kingdom between 2008 and 2009, as an antidote for the economic crises of the time (Miller and Holmes, 2011). For global economic powerhouses to have quickly adopted economic protectionisms at the expense of their popular support for free market economy, is a vindication of the appropriateness of these measures to achieving macroeconomic stability.

Import-substitution Industrialisation in Brazil

The ISI policy in Brazil was uniquely successful. The process resulted in the advancement of Brazil's economy as well as its industrialisation (Cason and White, 1998). While some shortcomings in the bureaucratic system constrained the full realisation of the policy targets, the contribution of the policy initiative to the current economic success of the country is significant. ISI in Brazil dates back to the post-1950s, with the adoption of protectionist measures like high tariffs and non-tariff barriers towards shielding importation (Abreau, Bevilaqua and Pinho, 1996).

A post-war economic trend in Brazil, while characterised by some variation, reflects a phased trend in the industrialisation process of the country (Baer and Kerstenetzky, 1964; De Souza et al., 2005; Geddes 1990; Wagner 1981). This classification can be broken down into five phases (Wagner, 1981). For the sake of simplicity, the classification used in this article covers the following periods: 1950-1961, 1962-1967, 1968-1973 and 1974 onward, as documented in literature.

The first two periods (1950-1967) were characterised by a large-scale import-substitution strategy (Sikkink, 1991). This period falls within the second presidency of Getulio Dornelles Vargas, who ruled Brazil between 1951 and 1954. As a strong antagonist of communism, he advanced his developmental agenda by promoting nationalisation of state resources, and promoted ISI-based industrialization plan. Invoking one of the cardinal arsenals of ISI (to reduce

foreign dependency), he founded the Petrobras Brazilian state oil enterprise in 1953.

The local manufacturing of basic consumer goods was promoted, and the importation of such items was constrained (Abreau et al., 1996). This resulted in low growth in heavy and medium manufacturing industries. The policy brought about a high demand for imports of intermediary goods, which resulted in a balance of payment (BOP) crisis (Shikida, 2005). To curb inflation, the government adopted exchange control at the expense of devaluating the cruzeiro[7] (Cason and White, 1998). This necessitated the introduction of import licensing in 1951, with preference given to manufacturers of essential consumer goods. Aside from walling against the importation of products that were locally available, the policy also facilitated the importation of input factors to support these industries (Friedman and De Villiers, 1996). Evidently, the benefits of ISI were reaped directly by bourgeois incumbency, with the trickle-down effect flowing to the working class and elites.

The shortage of foreign currency inflow that characterised the policy resulted in another round of the current account crisis, necessitating the redirection of the policy in 1953 (Wagner, 1981). The major adjustment made to the policy was the introduction of a more flexible, multiple exchange rate system that aided the easier importation of 'essential' input factors, while the importation of input resources that were locally available attracted very high tariffs (Wagner, 1981). In addition, the policy stimulated some exports (intermediate goods and machinery) with higher exchange rates than those of traditional exports (textile, food products and clothing). The inherent administrative bottlenecks in the policy were removed, while vertical integration into certain industries was facilitated to leverage the synergistic advantage presented by export control. It must be said that Vargas regimes (both as a dictator and as a democratic leader) were of little difference from the apartheid regime in South Africa, essentially given the fact that the working class and peasantry were disenfranchised.

After Vargas suicide in 1954, the regime of Juscelino Kubitschek between 1956 and 1961 departed slightly from the economic orthodoxy of the previous regime. While promoting the inflow of foreign capital within an ISI framework, the liberalisation process faltered on weak institutional infrastructures needed to checkmate the socioeconomic and political implication of such an idea. The inflow of foreign capital resulted in the crowding-out of local manufacturing capability, and breeded uneasiness among the middle class who felt that their comfort zone (economic autarky) was under attack. This eventually led to the gradual erosion and redefinition of populist ideology in Brazil. During Kubitschek's regime, the government introduced incentives to encourage

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7 Cruzeiro was the former currency of Brazil, before it was renamed 'real'.

direct foreign investment while protecting its local market (Walter, 1971; World Bank, 1983). Some export-driven industries (automotive, cement, steel, aluminium, cellulose, heavy machinery and chemical) were identified, protected and supported (Taylor, 1996). This policy initiative startled the diversification of the economy, leading to a rapid economic growth. Between 1950 and 1961, the GDP grew by more than 7%, with industry (transport equipment, machinery, electric equipment and appliances, and chemicals) being the main contributors (Abreau et al., 1996).

The regime of President Emilio Medici between 1969 and 1974 was characterised by an unprecedented economic development (between 1968 and 1973, known as the 'Brazilian Miracle') (De Souza et al., 2005; Guimarães 2004). This period was characterised by the introduction of policies aimed at establishing macroeconomic stability, expanded international trade, and lesser export-manufacturing tariffs; without any comprehensive departure from the framework of ISI. Riding on the laurels of the previous ISI-imbibed policies, Medici adopted outward-looking development strategy as a way of synergising the gains reaped through improved infrastructural and manufacturing capacity. This initiative paid a dividend, as the tax/GDP rose sharply, thereby boosting investor confidence in the economy. As a result, international financial institutions turned their attention to Brazil to market their 'star merchandise' – debt. To generate enough domestic funding, the government encouraged foreign capital inflow.

The period from 1974 onward was characterised by economic growth, although this growth was not immune to the usual boom and bursts that characterise the import intensity of ISI. The first policy initiative was the establishment of the second Brazilian National Development Plan (II PND) in 1974. This policy was aimed at facilitating the promotion of heavy and chemical industries – a replicate of the South Korean 1973 export push (Malan and Bonelli, 1977; Wagner, 1981). In addition, the Import Bill of 1974 was promulgated to reinforce the ISI policy. The Bill was enacted to control the importation of input materials (including oil), which accounted for about 90% of the provisions of the Bill (Wagner, 1981). The intervention turned out to be an anchor for economic development for Brazil. Between 1975 and 1978 the real value of total imports fell by an average of 1.1% (Raul, 1982). This signalled the need to export excess local manufactures in order to boost the national productivity frontiers. This strategy paved the way for Brazil's macroeconomic stability as the government embraced and supported exportation.

Using the ISI as an arsenal, the post-1980s saw a rapid change in policy focus of the Brazilian government, as more outward-looking economic policies were adopted to complement the gains of the ISI policy. From 1940 to 1980, the economy of Brazil grew by an average of 7%, and the economy was eman-

cipated from the desolation of the 1980s – inflation and debt (An economic superpower, and now oil too, 2008). Although, the country's inflation rose to a record 2 500% in 1993, the situation was reversed to 4.7% in 2008. Its foreign reserves of US$262 billion in 2010 (EIU, 2010) is an indication that the ISI policy worked favourably for the Brazilian economy.

It must be said, however, that the bubble and burst cycles that characterise ISI do generally require the formulation and revision of different macroeconomic policies to accommodate the swings in the dynamics of labour market (such as the boom in labour attraction/high wages as opposed to unemployment/low wages). Although, some of the major policy reforms adopted during and after the ISI regimes did not herald an ultimate economic prowess (policies such as the transformation of Brazil from plantation-based economy into an industrialized powerhouse through President Getulio Dornelles Vargas' developmental ideology; the devaluation policy introduced in 1999 by President Fernando Henrique Cardoso or President Lula Da Silver's poverty alleviation programme), they helped to capacitate Brazil of today as a testimony of the appropriateness of ISI to a developing economy.

Import-Substitution Industrialisation in South Africa

During the 1950s and 1960s many countries, especially in Africa, adopted ISI (Holden, 1990), specifically shortly after their political emancipation. The policy was adopted to protect infant industries across the continent. This problem was exacerbated by the reluctance of advanced countries to admit products from developing nations into their markets, on the premise that products from developing countries were inferior and therefore unfit for consumption in the advanced economies (Shafaeddin, 2005). Aside the four tigers, most developing nations, especially Brazil and South Africa, 'justifiably' encouraged economic industrialisation through ISI (Kebonang, 2006; Seid, 2002). Institutional support systems were erected to strengthen the policy. More specifically, the South African economy was crafted on manufacturing activities that revolve around natural resources such as gold, diamond, platinum, iron and steel, and other precious commodities (GGCG, 2006). As a result, material beneficiation was considered to be an important strategy to channel the country towards industrialisation.

ISI as an economic policy was favoured by the Pact Government (1924-1933) – a coalition government of the socialist-orientated Creswell's Labour Party combined with Hertzog's National Party. The electoral victory of this alliance shifted the economic philosophy of the government from economic liberalisation to economic nationalism in the form of ISI. The Pact Govern-

ment advocated economic self-sufficiency by protecting local industry (McCarthy, 1988). The ISI policy in South Africa was supported by the following framework:

- The government made available large subsidy for import substitution.
- Strategic industries like the South African Coal, Oil and Gas Corporation (SASOL) and the Armaments Corporation of South Africa Ltd (Armscor) were developed and enlarged.
- Large subsidies were made available for industrial development in the homeland border areas.

Practically, from the mid 1920s up to the post-World War II period and shortly before 1994, South Africa adopted an explicit industrial policy epitomised by import substitution (Moritz, 1994; Soludo, Ogbu and Change, 2004). Furthermore, the ISI policy was adopted by the apartheid regime as an instrument to avert the eventual collapse of the economy, occasioned by the global isolation that resulted from the apartheid regime (McCarthy, 1992:453). The ISI policy catalysed the economic transformation of South Africa from the production of consumer goods to that of capital and intermediate goods. The policy achieved a regression from light to heavy industry. Between 1925 and 1985 manufacturing recorded a growth rate from 36.4% of GDP to 64.3% (McCarthy, 1992:453). For instance, the increase in the contribution of the manufacturing sector to the GDP between 1925 and 1985 (from 36.4 to 64.3% of GDP) was mainly recorded by the heavy industry that supported the mining sector (Moritz, 1994:14). Unlike in other regions (especially Brazil), South Africa's import-substitution policy only covered industrial consumables and virtually excluded capital goods (Standish, 1992). The import-substituting industries then formed the basis for increasing the importation of capital inputs (Nattrass and Ardington, 1990) in order to increase local production capacity.

Although the main macroeconomic policy in South Africa was characterised by ISI, attempts were made to promote exports as a complement to the ISI at a later stage. For instance, between 1981 and 1990, the value of exported manufactures nearly doubled, with an average annual growth of 7% (Trade Monitor, 1993:1). This increase in exports was facilitated by the saturated domestic market and government's trade liberalisation policies, to leverage export potentials that resulted from improved local production capacity (Trade Monitor, 1993).

More specifically, South Africa complemented the ISI policy in April 1990 with an exports regime, when the General Export Incentive Scheme (GEIS) was introduced. This marked the advent of the legislated export-promotion

era in the country (Hirsch, 1993). The policy harnessed state resources to support export manufacturers, especially those in the heavy industries (Moritz, 1994). Based on the large scale of products covered, the policy appropriated almost one half of the total annual budget of the Department of Trade and Industry (Trade Monitor, 1993:1). Since the GEIS was a very costly intervention mechanism, the South African government – prompted by the dictates of the World Trade Organisation (WTO) – decided to phase out the policy in 1995 (Nattrass, 1996), during the early days of democracy in South Africa.

As in the case of Brazil, the ISI policy helped the South African economy to liberalise its labour market, established institutions and capabilities that are required to galvanise rapid economic development. Of importance was the adoption of austerity measures during the first tenure of President Nelson Mandela and later on, Thabo Mbeki, as a way of heralding the apartheid economic legacies. The negatives of this orthodox macroeconomic policy evaporated with the unprecedented level of economic growth recorded thereafter. The impact of policy reforms beehived on the launchpad of ISI initiatives (such as Creswell's nationalisation policy, Frederik Willem de Klerk's economic liberalisation and Nelson Mandela/Thabo Mbeki's capital market liberalisation) have helped to catapult South Africa into the league of economic powerhouse in the developing economies – a testimony to the appropriateness of ISI strategy in a developing economy.

Empirical Research

This article examines the socioeconomic and political dynamics in Brazil and South Africa as an antecedence of ISI. To that effect, the measurable indicators of these scenarios are used in econometric estimations. This article adopts a series of diagnostic methods to ensure reliability and soundness of the findings. Eviews 7.1 statistical package was used in regression analyses coupled with estimation error diagnostic techniques. The following paragraphs present the model specification, estimation methods, analysis and discussion of findings.

The model specified in this research is as follows:

$$LGDPPPP_t = \alpha_o + \beta_1 LIMPORT_t + \beta_2 LINFLATION_t + \beta_3 NRES_t + \beta_4 LEXPORT_t + \beta_5 CURR_t + \varepsilon_t$$

Where:
$LGDPPPP$ = the GDP per capita at purchasing power parity in log form in period t
$LIMPORT$ = the natural log of export at time t
$LINFLATION$ = the natural log of inflation at time t
$NRES$ = the natural reserves as a ratio of GDP at time t

LEXPORT = the natural log of export at time *t*
CURR = current account balance at time *t*
ε_t = the white noise error term

The theoretical a priori expectation is that there should be both positive and negative relationship between the dependent and the independent variables. The literature survey supports this assumption, as the swings in the GDP per capital at purchasing power parity of Brazil and South Africa positively correlates to imports, export and inflation; and negatively correlates to national reserves and current account balance. In a few instances where this correlation was not recorded, this is attributed to exogenous inference.

The following data analysis is based on the data generated from the WDI databases (World Development Indicators) and the trade statistics database for both countries. This allays the fear of potential robustness of the findings with respect to country-specific effects and time-related effects. The data covered a period of 34 years, from 1975 to 2009. This wide period was adopted to evaluate the time-related effects of the ISI as a macroeconomic policy in these countries, both during and after the adoption of the policy. Although the data do not specifically cover the introductory phase of ISI regimes in both countries,[8] the data set reflects the historical trend of events in a transitory manner. This is considered to be appropriate, since any policy of an ISI nature normally takes a long time before its effects on economic fundamentals become apparent (Rodriguez and Rodrick, 2000; Root, 1994). More specifically, cross-sectional time series (panel estimation) is deemed appropriate as it accommodates time-specific dynamics, and time-related oversights.

Data Analysis

In this study, a series of statistical techniques and methods are applied. The preliminary estimation process required a test for unit roots in the variables used. The study adopted the Augmented Dickey Fuller (ADF) test to estimate the stationarity of variables. The ADF test is used in time series to test for unit roots. Strong negative numbers of unit roots suggest that the null hypothesis be rejected on the basis that there is a unit root at some level(s) of confidence. However, this test is generally not reliable for small sample data sets due to its size and power properties (Dejong, Nankervis and Savin, 1992; Harris and Sollis, 2003). In the instance of small sample size, this test seems to commit

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[8] It is pertinent to note that Brazil and South Africa did not adopt ISI in the same calendar year.

types 1 and 2 hypothesis errors: it rejects the null hypothesis when it is true and accepts the null hypothesis when it is false (Ng and Perron, 2001). To solve the problems of data size and power properties, two additional tests were conducted, namely, the Dickey-Fuller Generalised Least Square (DF-GLS) and the Phillips-Perron tests. The DF-GLS test, which is also referred to as a de-trending test, was developed by Elliot, Rothenberg and Stock (1996). This test was developed to enhance the power of ADF tests for small sample sizes.[9] The unit roots tests conducted for the two countries suggest that there is no indica-tion of unit roots in the variables used at level – all the variables are stationary at level, therefore suggesting no need for differentiation. The following tables present the findings of the various statistical analyses that were conducted. The first three tables (1-3) contain the analyses for Brazil, while the last three (4-6) contain those for South Africa.

After the unit roots test, the explanatory power of the variables was studied through stepwise regression. This analysis is contained in Table 1. From Table 1, *LINFLATION* (0.046) and *LEXPORT* (0.011) appear to exhibit higher explanatory powers. However, none of the regressors was dropped from the analysis. With the probability statistics of 0.0000, the regression exhibits a high degree of con-fidence level, and as such, the predictive ability of the regression variables are seen to be high.

The Newey-West HAC standard errors and covariance (lag truncation = 2) – heteroscedastic consistent estimation was conducted to cater for the issue of heteroscedasticity. The Breusch-Godfrey serial correlation LM test (F-test) was also conducted to ascertain the goodness of fit for the model. Table 2, the Newey-West HAC analysis, indicates that there is both a strong positive and a negative relationship between the dependent variable and the explanatory variables. While the coefficient of *CURR* exhibits strong negative relationship and statistically significant, the negative relationship between *GDPPPP* and *INFLATION* is low, however, statistically significant. The relationship between the dependent variable and *NRES* is also strong in the negative territory, how-ever, not statistically significant. This analysis suggests that to increase the quality of life of the people, the negative current account balance should be reduced, so also is inflation and the negative national reserves.

The fact that exports and imports have positive coefficients indicate that Bra-zilians would benefit from economic development if exports were promoted (exports are statistically significant), while a few imports would also help to boost economic development. The adjusted R-squared is high enough to sug-gest a high predictive ability of each of the variables included in the model.

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⁹ See Elliot et al. (1996) for the order of integration of the unit root variable . . . xt.

Table 1
Stepwise regression for Brazil

Dependent Variable: LGDPPPP
Method: Stepwise Regression
Date: 08/04/11 Time: 11:16
Sample (adjusted): 6 35
Included observations: 30 after adjustments
Number of always included regressors: 6
Number of search regressors: 6
Selection method: Stepwise forwards
Stopping criterion: p-value forwards/backwards = 0.5/0.5

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
LIMPORT	0.021951	0.049084	0.447212	0.6587
LINFLATION	-0.002709	0.001289	-2.101622	0.0463
NRES	-6.16E-14	4.77E-13	-0.129156	0.8983
LEXPORT	0.133118	0.048244	2.759261	0.0109
CURR	-7.24E-13	8.91E-13	-0.812268	0.4246
C	5.110532	0.537165	9.513895	0.0000

R-squared	0.877954	Mean dependent var	8.953767
Adjusted R-squared	0.852528	S.D. dependent var	0.092403
S.E. of regression	0.035485	Akaike info criterion	-3.662576
Sum squared resid	0.030220	Schwarz criterion	-3.382336
Log likelihood	60.93863	Hannan-Quinn criter.	-3.572925
F-statistic	34.52956	Durbin-Watson stat	1.835612
Prob(F-statistic)	0.000000		

Selection Summary

No regressors were chosen by the stepwise routine

*Note: p-values and subsequent tests do not account for stepwise selection.

As seen in Table 2, the problem of positive serial correlation is also not strong, as indicated by the Durbin-Watson of 1.93. The basic statistical rule is that the Durbin-Watson statistic should be greater than 1 but less than 2 to suggest non positive serial correlation. The probability F-statistic is significant at 1% level, and the adjusted R square (0.85) is high enough to suggest a high predictive ability of each of the variables used in the model, indicating that the explanatory variables explains 85% of the variation expressed by the dependent variable.

Table 2

Newey-West HAC standard errors and covariance (lag truncation = 2) for Brazil

Dependent Variable: LGDPPPP
Method: Least Squares
Date: 08/04/11 Time: 08:35
Sample (adjusted): 6 35
Included observations: 30 after adjustments
HAC standard errors & covariance (Prewhitening with lags = 2, Bartlett
  kernel, Integer Newey-West fixed bandwidth = 4.0000)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
CURR	-7.24E-13	3.71E-13	-1.954031	0.0624
LEXPORT	0.133118	0.050546	2.633633	0.0146
LIMPORT	0.021951	0.056255	0.390202	0.6998
LINFLATION	-0.002709	0.001223	-2.214404	0.0365
NRES	-6.16E-14	2.09E-13	-0.295288	0.7703
C	5.110532	0.284365	17.97175	0.0000

R-squared	0.877954	Mean dependent var	8.953767	
Adjusted R-squared	0.852528	S.D. dependent var	0.092403	
S.E. of regression	0.035485	Akaike info criterion	-3.662576	
Sum squared resid	0.030220	Schwarz criterion	-3.382336	
Log likelihood	60.93863	Hannan-Quinn criter.	-3.572925	
F-statistic	34.52956	Durbin-Watson stat	1.935612	
Prob(F-statistic)	0.000000			

The Breusch-Godfrey serial correlation LM test contained in Table 3 further allays the fear of serial correlation in the model specified, because the functional form of the model was well specified and all the variables pass through the diagnostic test (Shahbaz, Ahmed and Ali, 2008). The F-statistics of 3.88 indicates that the variables in this model has a high predictive ability, and the probability printed to the right of the Obs*R-squared statistic in Table 3 (i.e. 0.02) represents the probability that one would be incorrect if one accepts the null hypothesis of the presence of serial correlation up to lag order 1 at the 95% confidence level. Given that this error term is low, the estimation parameters of the null hypothesis are found to be stable. This method is applied because it is a more robust test for autocorrelation in the residuals of regression analysis.

Table 3
Breusch-Godfrey serial correlation LM test for Brazil

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	3.881057	Prob. F(2,22)	0.0360
Obs*R-squared	7.824156	Prob. Chi-Square(2)	0.0200

Test Equation:
Dependent Variable: RESID
Method: Least Squares
Date: 08/03/11   Time: 11:03
Sample: 6 35
Included observations: 30
Presample missing value lagged residuals set to zero.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LIMPORT	-0.004125	0.044173	-0.093379	0.9264
LINFLATION	0.000138	0.001161	0.118971	0.9064
NRES	-6.17E-14	4.32E-13	-0.143057	0.8875
LEXPORT	0.001665	0.043333	0.038421	0.9697
CURR	-6.42E-14	8.02E-13	-0.079970	0.9370
C	0.060070	0.484826	0.123900	0.9025
RESID(-1)	0.581460	0.210685	2.759847	0.0114
RESID(-2)	-0.207814	0.211583	-0.982185	0.3367

R-squared	0.260805	Mean dependent var	1.78E-15
Adjusted R-squared	0.025607	S.D. dependent var	0.032281
S.E. of regression	0.031865	Akaike info criterion	-3.831436
Sum squared resid	0.022338	Schwarz criterion	-3.457783
Log likelihood	65.47154	Hannan-Quinn criter.	-3.711901
F-statistic	1.108874	Durbin-Watson stat	2.051082
Prob(F-statistic)	0.392230		

After the unit roots test for South Africa dataset, which found no evidence of unit roots, the explanatory power of the variables used in the regression was studied through stepwise regression. This analysis is contained in Table 4. From Table 4, *IMPORT, INFLATION*, and *CURR* exhibit negative relationship with the dependent variable. While *CURR* shows a strong negative and statistically significant value, *INFLATION* is statistically significant but with low nega-

Table 4
Stepwise regression for South Africa

Dependent Variable: LGDPPPP
Method: Stepwise Regression
Date: 08/03/11 Time: 10:55
Sample (adjusted): 6 35
Included observations: 30 after adjustments
Number of always included regressors: 6
Number of search regressors: 6
Selection method: Stepwise forwards
Stopping criterion: p-value forwards/backwards = 0.5/0.5

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
LIMPORT	-0.113027	0.077679	-1.455050	0.1586
LINFLATION	-0.096811	0.014946	-6.477328	0.0000
NRES	1.82E-12	3.74E-12	0.485972	0.6314
LEXPORT	0.254111	0.082993	3.061844	0.0054
CURR	-8.82E-12	2.51E-12	-3.506850	0.0018
C	5.913714	1.024472	5.772449	0.0000

R-squared	0.871669	Mean dependent var	9.005635
Adjusted R-squared	0.844933	S.D. dependent var	0.076616
S.E. of regression	0.030170	Akaike info criterion	-3.987055
Sum squared resid	0.021846	Schwarz criterion	-3.706815
Log likelihood	65.80582	Hannan-Quinn criter.	-3.897404
F-statistic	32.60330	Durbin-Watson stat	1.865284
Prob(F-statistic)	0.000000		

Selection Summary

No regressors were chosen by the stepwise routine

*Note: p-values and subsequent tests do not account for stepwise selection

tive figure, but *IMPORT* is not statistically significant but also with a negative coefficient.

The result in Table 4 is very similar to the one obtained in Table 1. More specifically, from Table 4, *LINFLATION* (0.0000), *CURR* (0.0018) and *LEXPORT* (0.0054) appear to exhibit higher explanatory powers. However, none of the regressors was dropped from the analysis. With the probability statistics of 0.0000, the regression exhibits a high degree of confidence level, and as such,

the predictive ability of the regression variables appears to be high. The possibility of irrelevant variable being included in the regression is zero as suggested by the stepwise analysis.

The Newey-West HAC standard errors and covariance (lag truncation = 2) – heteroscedastic consistent estimation was conducted to cater for the issue of heteroscedasticity. The Breusch-Godfrey serial correlation LM test (F-test) was also conducted to ascertain the goodness of fit for the model, following the same pattern with the Brazil estimation process. The result of the Newey-West HAC analysis is contained in Table 5. The analysis contained in Table 5 indicates that there is both a strong positive and a negative relationship between the dependent variable and the explanatory variables. While the coefficient of *CURR* exhibits strong negative relationship and statistically significant (0.030), the negative relationship between *GDPPPP* and *LINFLATION* is low, however, statistically significant (0.0000). The relationship between the dependent variable and *LIMPORT* is also in the negative territory, however, not statistically significant. This analysis suggests that to improve the quality of life of the people of South Africa, inflation must be tackled. Also, the negative current account balance should be reduced, and import should be reduced as well.

The fact that exports and national reserves have positive coefficients indicate that South Africa would benefit from improved purchasing power (quality of life) if national reserve is buffered and export promoted. More importantly, exports is statistically significant (0.0079), while national reserve is not statistically significant, suggesting that export promotion is indeed, very crucial to the development of the economy and to improving the standard of living of the people. The adjusted R-squared (0.84) is high enough to suggest a high predictive ability of each of the variables in the model.

The diagnostic properties of Table 5 suggest that the model passes basic statistical tests. For example, Table 5 shows that the problem of positive serial correlation is not strong, as indicated by the Durbin-Watson of 1.865, suggesting that there is no problem of long-run autocorrelation in the model specified. The probability F-statistic is significant at 1% level, and the adjusted R square (0.84) is high enough to suggest a high predictive ability of the model. More so, the residuals of the regression in Table 5 are stable throughout the time (t) at 99% confidence level.

In the whole, the analysis generally indicates a similar trend for Brazil and South Africa, except that the predictive ability of the determinant variables is stronger in South Africa as opposed to Brazil. This suggests that the ISI policy has more effect on the South African economy than that of Brazil. The result of the Breusch-Godfrey serial correlation LM test is contained in Table 6.

Table 5
Newey-West HAC standard errors and covariance (lag truncation = 2)
for South Africa

Dependent Variable: LGDPPPP
Method: Least Squares
Date: 08/03/11 Time: 08:52
Sample (adjusted): 6 35
Included observations: 30 after adjustments
HAC standard errors & covariance (Prewhitening with lags = 2 from AIC
　　maxlags = 2, Bartlett kernel, Newey-West fixed bandwidth = 4.0000)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
CURR	-8.82E-12	3.83E-12	-2.300271	0.0304
LEXPORT	0.254111	0.087632	2.899757	0.0079
LIMPORT	-0.113027	0.088368	-1.279045	0.2131
LINFLATION	-0.096811	0.012397	-7.809469	0.0000
NRES	1.82E-12	2.66E-12	0.683492	0.5008
C	5.913714	1.130189	5.232501	0.0000

R-squared	0.871669	Mean dependent var	9.005635
Adjusted R-squared	0.844933	S.D. dependent var	0.076616
S.E. of regression	0.030170	Akaike info criterion	-3.987055
Sum squared resid	0.021846	Schwarz criterion	-3.706815
Log likelihood	65.80582	Hannan-Quinn criter.	-3.897404
F-statistic	32.60330	Durbin-Watson stat	1.865284
Prob(F-statistic)	0.000000		

The Breusch-Godfrey serial correlation LM test contained in Table 6 also allay the fear of serial correlation in the model specified, because the functional form of the model was well specified and all the variables pass through the diagnostic test, just as in the case of Brazil. The F-statistics of 4.84 indicates that the variables in this model has a high predictive ability, and the probability printed to the right of the Obs*R-squared statistic in Table 6 (i.e. 0.010) represents the probability that one would be incorrect if one accepts the null hypothesis of the presence of serial correlation up to lag order 1 (residuals) at the 99% confidence level. Given that this error term is low, the estimation parameters of the null hypothesis are observed to be stable.

Table 6
Breusch-Godfrey serial correlation LM test for South Africa

F-statistic	4.842771 Prob. F(2,22)		0.0181
Obs*R-squared	9.170310 Prob. Chi-Square(2)		0.0102

Test Equation:
Dependent Variable: RESID
Method: Least Squares
Date: 08/03/11 Time: 08:58
Sample: 6 35
Included observations: 30
Presample missing value lagged residuals set to zero.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
CURR	2.33E-13	2.20E-12	0.105869	0.9166
LEXPORT	-0.055746	0.077705	-0.717404	0.4807
LIMPORT	0.052974	0.072284	0.732850	0.4714
LINFLATION	0.001635	0.013212	0.123729	0.9027
NRES	6.75E-13	3.31E-12	0.203775	0.8404
C	0.070151	0.894995	0.078381	0.9382
RESID(-1)	0.773079	0.271171	2.850889	0.0093
RESID(-2)	-0.166700	0.285025	-0.584862	0.5646

R-squared	0.305677	Mean dependent var	-1.42E-15
Adjusted R-squared	0.084756	S.D. dependent var	0.027447
S.E. of regression	0.026258	Akaike info criterion	-4.218540
Sum squared resid	0.015168	Schwarz criterion	-3.844887
Log likelihood	71.27809	Hannan-Quinn criter.	-4.099005
F-statistic	1.383649	Durbin-Watson stat	1.520152
Prob(F-statistic)	0.261212		

Conclusion

In literature, the social implication of economic development has been emphasised, so also is the political consequence of an improvement in the quality of life of electorates. Evidence suggests that political instability witnessed by both Brazil and South Africa during 1940s up until 1980s did not orchestrate substantially obvious economic instabilities in the two countries over the period. To avert the ugly incidence of economic volatility, the two economies

experimented a quasi-mercantilist ideology by promoting exports at the expense of import using the ISI as a launchpad. This approach was favoured by these emerging markets despite ISI policy being targeted for criticism by analysts who saw the macroeconomic policy as self-defeating rather than as a catalyst to achieving rapid industrialisation.

This article demonstrates that the ISI policy contributed meaningfully to the industrialisation processes of Brazil and South Africa. It was found in the relevant study that ISI has helped some developing countries (especially Brazil and South Africa) to establish institutional frameworks and manufacturing mechanisms that eventually catalysed the advancement of their manufacturing sectors, though in varying degrees. The level of success recorded by the policy in Brazil (which is higher in the case of South Africa) could arguably be regarded as a major contributing factor to the more recent industrial development and economic growth of these countries.

The conclusion can be drawn that some of the industrial facilities that developed through the ISI policy became major contributors to the economies of these two countries. Although the cyclical effect of the policy on national reserves and current account balance of these countries were noticeable, this article uncovers the contribution of ISI policy in galvanising industrial development of these two nations, thereby bearing testimony to its appropriateness at the time of introduction. In conclusion, this revelation provides the impetus for developing countries to rethink the sequencing of their macroeconomic policies. Having demonstrated the effectiveness of ISI in Brazil and South Africa, this article is intended to motivate developing countries that strive towards a home-grown industrialisation strategy.

The study on which this article reports investigated the contribution of ISI to the current level of industrial development in Brazil and South Africa, using policy and socioeconomic indicators such as the GDP per capita at purchasing power parity level, imports, inflation, national reserves, exports and current account balance. While literature suggests that the efficiency of government institutions is essential to the success of ISI policy in these two countries, this research investigates the institutional apparatus that supports this policy in both countries, and juxtaposed the socioeconomic effects of the policy against the political agenda of the rulership. However, the limitation of this research lies on the premise of availability of data. The data used in this study covers the period between 1975 and 2009. While literature supports the estimation parameters, it may be necessary to run a similar analysis on countries that have also adopted ISI at a point in time, with a wider statistical coverage. In conclusion, it can be argued that the blanket policy recommendation of the institutions of the Washington Consensus that incite developing nations to blindly embrace

export orientation (under the auspice of trade liberalisation) before developing safety nets necessary to leverage the benefits of exportation, is not only incorrect, but also misleading. Based on this premise, it is argued in this article that ISI is a springboard on which a rapid industrialisation development, economic growth and economic self-reliance could be launched by developing economies.

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