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Exploring unbalanced growth: Understanding the sectoral structure of the South African economy☆

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ABSTRACT

This paper presents empirical evidence in support of an account of unbalanced growth in the South African economy: an interaction between sectorally differentiated total factor productivity growth, with a price elasticity of demand below unity. As sectors with faster TFP growth produce more real output over time, their relative prices fall, with the price changes triggering increases in consumption demand that less than offset the price fall. As a result sectoral shares in nominal output decline. This generates a structural shift of the labour factor input to low productivity sectors over time. Policies targeting returns to labour and wage growth alone will be insufficient to address unemployment. Instead, policies targeting the supply side of the economy and international competitiveness are likely more effective for raising employment and growth. The paper is the first to test the TFP-price elasticity mechanism on emerging market data, and a first explanation of unbalanced growth in South Africa.

1. Introduction

This paper explores reasons for South Africa's unusual economic structure. Not only do the service sectors in South Africa contribute disproportionately to value added and employment given its level of development, but its industrial sectors have been in long-term relative decline since the 1980s. In this paper we confirm that the South African evidence supports the Ngai and Pissarides (2007) account of the source of unbalanced growth: sectorally differentiated total factor productivity growth combined with a price elasticity of demand below unity shifting labour to low productivity sectors.

South Africa's sectoral structure has close affinities with the characteristics of developed economies, rather than emerging markets. Despite the fact that South Africa continues to lag developed countries substantially in terms of per capita GDP, its growth remains low, and shows signs of secular stagnation rather than catch-up (see Fedderke and Mengisteab, 2017). It thus appears to behave more like a country in growth steady state than a country subject to strong developmental impetus. This is confirmed by the anemic evolution of real per capita income of the South African economy over time, when compared both with other emerging markets, and with the world economy more widely. Table 1 Panel A reports decade mean real per capita GDP values for the 1960–2016 period, indexed to 100 for 1960 for a set of Emerging Markets. With respect to each of the 16 comparator countries, drawn from Latin America, South, South East and East Asia, and the Middle East-North African region, South Africa's ability to improve its real per capita GDP relative to its starting value in 1960, has lagged that of its comparators significantly over each of the six successive decades. As a result, the mean index value of real per capita GDP has fallen from being comparable to the mean of the comparators in the 1960s (104% of the group average), to 22 per cent of the mean value of the comparators in the 2010s. Nor is this poor performance restricted to a comparison with emerging markets. Table 1 Panel B repeats the comparison of real per capita GDP, for the mean values for High Income, Lower and Upper Middle Income countries, as well as the entire World. The inference is symmetrical to that for a comparison with emerging economies: South African growth performance has been poor in the six decades since 1960, even when the comparison is extended to middle income, high income economies, and even the mean performance of all economies recorded in the World Development Indicators. Relative to Upper Middle Income Country averages (the most immediate comparator group for South Africa), real per capita income declined from 101% to 31% of the comparator group average over the 1960–2010 period, illustrating the dramatic loss of relative welfare by South Africa.

While a few prior papers have reflected on the unusual industrial structure of South Africa (see Fedderke, 2010, 2013), analytical engage-

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ment of possible explanations of the structure has been cursory. The present paper aims to redress this omission. The rising significance of the service sector over time with rising per capita GDP, is not unique to South Africa. Observations of this pattern for the USA are associated with Clark (1940), Stigler (1956), Kuznets (1957, 1966), Baumol (1967), Fuchs (1968), Kravis et al. (1983) and Maddison (1987). A number of explanations of the rising significance of the service sector have emerged in the international literature. Of necessity, what these approaches have in common is that they represent attempts to move beyond the balanced-growth framework that is fundamental to core growth theory. Growth theory as represented by for instance Solow (1956, 1957), has the fundamental prediction that the economy will have a unique steady state, in which output, capital and labour grow at the same fundamental rate, rendering the capital-labour ratio and per capita income level of the economy constant, consistent with the stylized facts of economic growth of Kaldor (1961). In the approaches reviewed below, the objective is to maintain the Kaldor stylized facts of growth at the aggregate economy-wide level, but to allow structural change at the industry level.[1]

One type of explanation rests on the structure of demand. For instance, Foellmi and Zweimüller (2008),[2] present a non-linear formalization of Engel's consumption cycles. Households are held to have a hierarchy of preferences, that are satisfied sequentially with rising income. Thus consumption moves from a preponderance of consumption focussed on basic needs (eg. food), to consumption focussed on less immediate, and finally luxury items. The associated pattern is one in which the weight of consumption moves from agricultural, to other primary commodities (associated with mining, say) to manufactures, and finally to services. Changes in the sectoral composition of aggregate GDP is therefore fundamentally attributable to sectoral differences in income elasticities of demand - a feature this model shares with Kongsamut et al. (2001).

A second type of explanation rests on sector-biased technological change. In the model of Ngai and Pissarides (2007), sectors experience different total factor productivity (TFP) growth rates but have identical capital intensities.[3] Under an intertemporal utility function that is logarithmic in the consumption aggregate, but with the consumption composite non-logarithmic but homothetic across goods, balanced growth emerges only if the price elasticity of demand is unity, while employment shifts to low-TFP-growth sectors for a price elasticity below unity, and to high-TFP-growth sectors for a price elasticity above unity. As sectors with faster TFP growth produce more real output over time, under price elasticity of demand below/equal to/above unity, their relative prices fall, with the price changes triggering increases in consumption demand that less than/proportionately/more than offset the price fall. Hence sectoral shares in nominal output decline/remain constant/increase, and hence employment shares decline/remain constant/increase. Since preferences under this approach are homothetic, this represents a direct alternative to the preceding explanation based on hierarchies of consumption needs.

In this paper the focus is on examining whether unbalanced growth can be attributed to sectorally differentiated TFP growth in South Africa, thus presenting a test of the Ngai and Pissarides (2007) explanation in an emerging market context. Reason for this choice is that differential TFP growth across sectors is consistent with an extended preceding literature on pricing power in South Africa, which establishes that strong differences in mark-ups of price over the marginal cost of production are associated with strongly differentiated productivity growth across sectors (Aghion et al., 2008, 2013, Fedderke et al., 2007, 2017).[4] This paper presents a range of confirmatory evidence for the South African economy consistent with the TFP-based explanation. Specifically across South African economic sectors we report differential TFP growth, differential adjustment in labour shares over time, differential adjustments in relative prices, negative correlation between sectoral productivity growth and employment growth, and an estimated price elasticity of demand below unity, all findings which are consistent with Ngai and Pissarides (2007) mechanisms. Reassuringly, the findings of a shift of factor inputs to low productivity growth sectors is consistent with the observation of relatively low growth in real output for South Africa in comparative terms.

The implication is that policies targeting returns to labour and wage growth alone will be insufficient to address unemployment in South Africa. Instead policies targeting the supply side of the economy and international competitiveness may be more effective for raising employment and growth.

Section 2 provides more detailed evidence on the industrial structure and its dynamics for South Africa, confirming that growth in South Africa is unbalanced. Section 3 provides a brief presentation of the theoretical framework we employ in this study. Empirical evidence in support is evaluated in section 4. Conclusions are reported in section 5.

2. Unbalanced growth in South Africa

More than 60% of South African GDP is contributed by the service sectors, while typically for emerging markets this proportion is distributed around the 50% mark.

The unusual structure of the South African economy is emphasized by means of an international comparison against other emerging market economies. In Table 2 we report the share of total value added contributed by the agricultural, industrial and service sectors of 17 emerging markets, reporting decade averages from the 1960s through the 2000s. South Africa has an unusually high proportion of GDP that is attributable to the service sectors, rather than industry or agriculture. Of our sample of 17 countries for the 2000s, five countries had less than 50% of GDP arising from services (China, Egypt, Indonesia, Malaysia, Thailand), eight had a contribution in the 50–60% range (Argentina, Brazil, Chile, Colombia, Ecuador, India, Korea, the Philippines), and only four had service sector contributions to GDP in excess of 60% (Mexico, Singapore, Turkey, South Africa). South Africa's distribution of output is thus much closer to that of High Income countries than its peer group of Middle Income countries.

A second unusual feature of the South African economy attaches to the dynamics surrounding the industrial sectors - from Table 2 it

[1] In addition to the two types of explanation for structural change outlined below, a third approach worth mentioning is provided by Buera and Kaboski (2012). In this approach, structural change is not driven by skill-biased technical change. Instead, consumption moves into more skill-intensive output, which triggers the growth of the skills-intensive service sector, which is (empirically) the part of the service sector that has reported strong growth rates in the USA. The underlying model posits that skills are specialized, allowing productivity gains in the use of skills in market versus home production, lowering costs of market versus home production, and increasing the price and hence the supply of skills. The trade-off of moving home into market production is that while market production is more productive (due to specialization) and hence cost effective, home production is more customized and hence yields higher utility (at higher cost). With development, the opportunity cost of home production rises, switching production to the market. Since this mechanism is more likely for a highly developed, high technology context, we do not extend consideration to this mechanism for the South African emerging economy case.

[2] See also the broader related literature on non-homothetic preferences - Echevarria (1997), Laitner (2000), Caselli and Coleman (2001), and Gollin et al. (2002). A further approach is to abandon the independence of preferences and technology, as in Kongsamut et al. (2001).

[3] In Acemoglu and Guerrieri (2008) both technical progress and capital intensity differ across sectors.

[4] Though for a discussion of evidence on the income elasticity based explanation, see Fedderke (2014). While there is some evidence in favour of differential income elasticities across sectors, output growth patterns are more consistent with the predictions of Ngai and Pissarides (2007) than Foellmi and Zweimüller (2008). While income elasticities of demand do manifest the pattern predicted by Foellmi and Zweimüller (2008), the model rests on homotheticity assumptions incompatible with the Ngai and Pissarides (2007) model we employ here.