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Trade liberalization and South African manufacturing

Looking back with data

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Abstract: This paper provides a retrospective assessment of the effects of trade policies on South African manufacturing since the transition to democracy, examining the differences and commonalities in the views of economists in favour of and against an acceleration of trade liberalization. Data from the Bureau of Economic Research are used to test a number of effects on manufacturing industry that were envisaged to flow from trade policy reforms, including effects on mark-ups, productivity, exports, employment, and investment. The evidence presented here shows that a rising real exchange rate results in falling unit raw material costs as expected. However, exporter profitability still suffers because the mark-up also falls, presumably to keep prices from rising too much in foreign currencies. There is evidence, too, that a real appreciation causes the export volume to decrease.

Keywords: manufacturing, trade policy, trade liberalization, South African economy
JEL classification: E24, E65, F14

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1 Introduction

The South African political economic situation is such that there is a binding political constraint on growth from the lack of employment opportunities, particularly for black South Africans. The instability—and expectations of instability—generated by this ingrained feature of the economy can be expected to inhibit long-term capital investment and consequently damage growth prospects (IBRD 2018). Contrariwise, alleviating this pressure through a credible and sustainable plan would unlock international and national confidence and potentially multiply the effects of any direct successes.

Four options are often mooted for breaking out of the impasse: (i) deregulate so as to favour an informal sector; (ii) increase investment incentives by lowering the consumption wage relative to returns to capital and skills; (iii) promote labour-intensive private activities by lowering employer unit wage costs, e.g. by reducing the labour tax wedge; (iv) increase competitive pressure on owners and managers to encourage more enterprise and export-led growth.

Taking these in turn:

(i) Expanding the informal sector would move South Africa towards a similar labour market structure to that of other economies at a similar stage of development (Rodrik 2008). The obstacles to this are said to include the historical pattern of concentrated unemployment in townships geographically separate from centres of spending, with physical and social networks continuing to be affected by this legacy. In any case it may be more difficult to promote an internationally competitive informal sector where redistributive policies account for a greater percentage of GDP than in other African countries (IBRD 2018).

(ii) Real wages are high in South Africa in relation to comparator countries outside Africa, and the same applies to unit labour costs (Gelb et al. 2013). However, in relation to comparator countries, wages and unit labour costs have not risen much in the first two decades since the transition to democracy and wage push has been argued not to be a significant feature of structural change (Rodrik 2008; Venter and Botes 2016). This general conclusion notwithstanding, the wages of managers and technicians have been argued to be higher than warranted, reflecting a politically supported extraction of economic rents that may be shared with categories of skilled labour; combined with impediments to labour supply from deficient transport, training, and child care, this may inhibit employment opportunities (Black et al. 2016; IBRD 2018; Michie and Padayachee 2019).

(iii) Subsidising labour-intensive activities is rarely considered by economists to be an attractive option. However, it is frequently practised even in developed economies under various guises, such as help for small firms, which are generally labour-intensive. Policies such as thresholds for onerous legislation or for liability for value-added taxes are in effect subsidies to labour. These may have a valid economic rationale when they correct other market distortions or generate positive externalities. Nevertheless, there will often be indirect negative effects, such as reduced spending elsewhere and loss of positive externalities from forgone innovation. And if the subsidy to employers is achieved through a lower tax wedge, there may be consequences for the social wage that it part-finances.

(iv) There is an ongoing controversy over the comparative level of profitability in South Africa and whether it exceeds what is normal elsewhere (Black et al. 2016; du Plessis et al. 2015;

Zalk 2014a).[1] A focus of this debate is whether reducing the effective trade protection for goods would diminish harmful feather-bedding of industry and incentivize firms to take expansionary risks or engage in innovation. The testing of this complex proposition has been made difficult by the absence of good comparative data.

The above list is not exhaustive but many of the issues that are ignored there, such as physical and educational infrastructure, can be seen as amplifying the effects of other policies. In this paper I consider the relative merits of arguments (iii) and (iv) above, as they seem the most realistic options. Furthermore, they have been debated as alternatives in the literature, but without a consensus being reached. Here I review and assess arguments made in a set of related papers in a special issue of *Economics of Transition* over a decade ago (Aghion and Fedderke 2008). Two of the papers in that compendium support the position in (iv) above. Aghion et al. (2008) and Edwards and Lawrence (2008) both focus on trade policy, arguing that it should be used to stimulate competition to promote growth. Rodrik (2008), on the other hand, worries about the effect of increased competition on mark-ups in manufacturing and a consequent shrinkage in the low-skill employment that this sector can provide. He is not convinced that a policy of moving up the value chain in manufacturing is a strategy relevant to the current stage of development of South Africa, and his arguments here could be inferred as support for (iii).

In the *Economics of Transition* compendium, these arguments are tested empirically with different data sets in separate papers but are not directly confronted in a systematic way. That is what I attempt in this paper, using the advantage of several more years of data and, in particular, survey data on manufacturing that are described in more detail in the next section. It can be said at the outset that the trajectory of the South African manufacturing sector since the early 1990s has been unimpressive, with employment falling and exports performing poorly compared with rival economies. This is despite a liberal trade agenda that saw the import penetration ratio for manufacturing climb from 17 per cent in 1990 to 42 per cent in 2012, with an even higher proportionate increase for labour-intensive sectors (Black et al. 2016).

The rest of the paper is structured as follows: Section 2 outlines some of the main arguments in the compendium by Aghion and Fedderke (2008) and distils from it some hypotheses that can be tested. Section 3 documents the data sources to be used in the paper; Section 4 reports econometric testing of the main hypotheses; and Section 5 adds an extension to test-related ideas on capital investment. Concluding discussion is in Section 6.

2 Specifying contested claims in Aghion and Fedderke (2008)

I first give a brief account of the three papers in Aghion and Fedderke (2008) that are to be reviewed, before extracting from them some implicit hypotheses for revisiting with new data.

(a) **Aghion et al. (2008)** is based on preceding contributions such as Aghion et al. (2005) and Fedderke et al. (2007). In the South Africa context, with data series starting in the early 1970s, it is argued that manufacturing industry has suffered from low competition and high mark-ups, which have retarded productivity growth. Mark-ups are held to be high in comparison with other states. Furthermore, for South African manufacturing up to the end of the authors' data series in 2004, '[there] is no robust evidence of a declining trend

[1] Du Plessis et al. (2015) compare measures for an indexed list of large firms in South Africa, listed in the USA and elsewhere, and obtain mixed results depending on the measure of profitability adopted and the chosen time period.

in the level of the mark-up'. The most relevant empirical findings for this paper are a negative sign of lagged price–cost margin (Lerner index) on labour productivity growth at both industry and aggregate levels up to the year 2000. Non-linear results confirm that the effect is attenuated at lower levels of competitive pressure. The authors worry that their results may point to a spurious correlation due to margins anticipating productivity shocks when the former are not instrumented, even though they are lagged. Attempts to instrument with import penetration failed due to weak instrument tests.[2]

(b) **Edwards and Lawrence (2008)** complements that (i) in that it emphasizes the contribution of trade liberalization to competitiveness. However, its focus is on trade performance rather than productivity. In particular it argues that exports of the 'non-commodity manufacturing sector' were boosted from 1990 by various trade liberalization measures. Not only was this effect the result of lower input costs, but it also reflected a lower *relative* profitability of domestic sales due to import competition. This finding provides a variant on evidence in Aghion et al. (2008), where import penetration seemed *not* to affect the total manufacturing mark-up. The authors restrict their attention to a sub-set of manufacturing exports where the effect of import prices might be greatest, defining 'non-commodity manufacturing' as excluding industries where primary inputs exceed 10 per cent of final sales (minerals; some metals; refined oil; food and tobacco; basic chemicals; and wood products). Exports of non-commodity manufacturing products rose considerably faster than those of total manufacturing in the 1990s and an econometric analysis suggests that trade liberalization policies (measured by nominal tariffs, effective protection rates, and export taxes) help to explain that pattern.[3, 4]

(c) **Rodrik (2008)**. There is some consensus here with the other two papers in that Rodrik argues for an export-based strategy and supports steps to increase the profitability of manufacturing exports. This strategy would reverse a trend increase of skill-intensive non-tradeable services.[5] Indeed, Rodrik's preferred approach is to de-emphasize capital-intensive manufacturing sectors as well and instead focus on low-skill, formal sector manufacturing, which is argued to be key to employment growth.[6] Rodrik attributes the low growth of manufacturing exports to a fall in the relative prices of manufacturing products. In contrast to the views of Aghion et al. (2008), he takes it as given that trade competition has resulted in a loss of profitability and pricing power (and indeed employment) for the manufacturing sector. In contrast to Edwards and Lawrence (2008), he suggests that the main sectoral shift induced by trade policy has been from manufacturing to services, rather than an intra-manufacturing shift to non-commodities. Econometric results suggest that, while much of the trend fall in the relative price of manufacturing output to GDP is unexplained, there is a causal effect from import

[2] Error correction estimation with data up to 2004 is also reported. Here the sign on the mark-up remains negative, though now without any significant non-linearity effect.

[3] I am grateful to Anthony Black for pointing out that one partial explanation for the rise in non-traditional exports is simply that democratization opened up African markets previously subject to sanctions of various sorts. SA's manufactured exports to the rest of Africa are much less commodity-based than manufactured exports elsewhere.

[4] The 'non-commodity' criterion seems to be defined in relation to direct inputs only, rather than being based on input–output tables; the Motor industry is classified as having almost zero commodity inputs, but Iron and Steel has a 30 per cent commodity ratio.

[5] Note, however, that skill-intensive services, feeding into manufacturing exports, have risen disproportionately with the increased importance of global value chains (Cali and Hollweg 2017).

[6] Alternative perspectives are considered in Rodrik (2016).

penetration and the real exchange rate with an appreciation causing lower manufacturing pricing power and thereby retarding growth in this sector. This opens a policy gulf with the other two papers reviewed here, which argue that competitive pressure stimulates manufacturing growth.

For each of the three papers in Aghion and Fedderke (2008), I now set out some key hypotheses that can be re-examined using new data, paying particular attention to the post-transition period:

(a) Aghion et al. (2008)

A1. No trend reduction in manufacturing mark-ups is observed in the post-transition period.

A2. Greater competitive pressure increases manufacturing productivity up to an inflection point.

(b) Edwards and Lawrence (2008)

EL1. Trade liberalization reduces import costs for manufacturing.

EL2. Trade liberalization reduces the relative profitability of domestic sales vis-a-vis exports and results in increased exports of 'non-commodity' manufacturing.

(c) Rodrik (2008)

R1. The manufacturing mark-up falls over the period since the transition to democracy.

R2. Manufacturing employment falls as the mark-up falls.

3 Data sources

The main data source used in this study is the South African Manufacturing database on manufacturing (ISIC code 3) maintained by the Bureau of Economic Research (BER) at the University of Stellenbosch. The survey is based on a manufacturing firm panel using deliberate sampling so that the same firms are approached from one survey to the next, the majority of responses between consecutive surveys being from the same companies. The sampling frame is updated every two years. The response rates have remained between 40 per cent and 45 per cent over the last three decades; on average, about 1,200 manufacturing units are included in the survey.

Although the survey contains industry-level data along with the aggregate, the replies are not dense enough within many industries to infer population statistics over the timespan of the data and accordingly only aggregates are considered. The data samples start around the point of the transition to democratic rule, running from 1992Q2 to 2015Q2.

The advantage of the survey data is that they contain directly recorded subjective indicators of business conditions (e.g. business confidence, unit costs, main constraints on economic activity) as well as of executives' intentions (e.g. pricing, investment, output, exports). These replies are aggregated by the BER into weighted averages so as to provide consistent time series that offer a valuable and reliable insight into business conditions, confidence, and behaviour.

Nearly all the survey questions require that the respondent indicate if a particular activity is 'up', 'the same', or 'down', where the reference period is the current quarter compared with the same quarter one year ago. For example, one question on the survey form asks:

'Compared with the same quarter a year ago [is]?

- fixed investment: up/the same/down [estimated for the current quarter]'

For a minority of questions, relating to Machinery & Equipment Investment and General Business Confidence, for example, expectations are requested for one year ahead, as in:

'In comparison with current levels in your sector, what do you expect the following to be in 12 months' time?

- General business conditions: up/the same/down'

Net balance statistics (i.e. percentage 'up' less percentage 'down') are constructed from both of these sets of data, being aggregated up from the individual responses using 'number of factory workers' as weights. It has been shown in Pesaran (1984, 1987) that survey data balance statistics correspond, under some restrictions, to a rate of change over the interval to which the survey question refers—in the current case, a four-quarter change.[7]

The reliability of business survey forecasts has been examined in a number of papers for a number of countries (e.g. Claveria et al. 2007; Tsuchiya 2013). For many of these business surveys the information obtained is qualitative. Research for the UK (Driver and Urga 2004) and Australia (Smith and McAleer 1995) has shown how their predictive accuracy varies with the method of transforming the qualitative replies, the simplest being to take a balance of difference between positive (up) and negative (down) replies. Lui et al. (2011)—who had access to the microdata underlying the UK's published balance statistics—concluded that the balance statistics provide 'valid indicators of the business environment' (p. 346). For the South African BER survey Driver and Meade (2019) find that the survey has predictive value and that the relative accuracy of the survey forecasts for capital investment versus a univariate time series forecast depends on the forecast horizon, the survey ranking higher at longer horizons for both directional and point forecasts.

The survey data series allows an investigation complementary to those based solely on official data. One advantage is that the data are quarterly, whereas historical trade data on manufacturing are not consistently available on a quarterly basis. On the other hand, the survey data series is built up from qualitative responses and the coverage within manufacturing is not generally good enough to disaggregate the data into a complete set of sub-sectors. A further disadvantage is that survey data will not capture external effects that occur at a higher level of aggregation than the firm.

For each hypothesis set out in Section 2, I construct a specification based on concepts that can be proxied by variables in the BER survey, using transformations such as differencing where appropriate. Table 1 records how some frequently occurring concepts are represented in the dataset and indicates acronyms to be used in the results tables.

[7] The use of a balance statistic is but one method of transforming the qualitative directional data to a quantitative series and there is a large literature on such transformations (e.g. Driver and Urga 2004; Mitchell et al. 2005).

Table 1: Explanation of the variables used in the paper including transformations and data sources

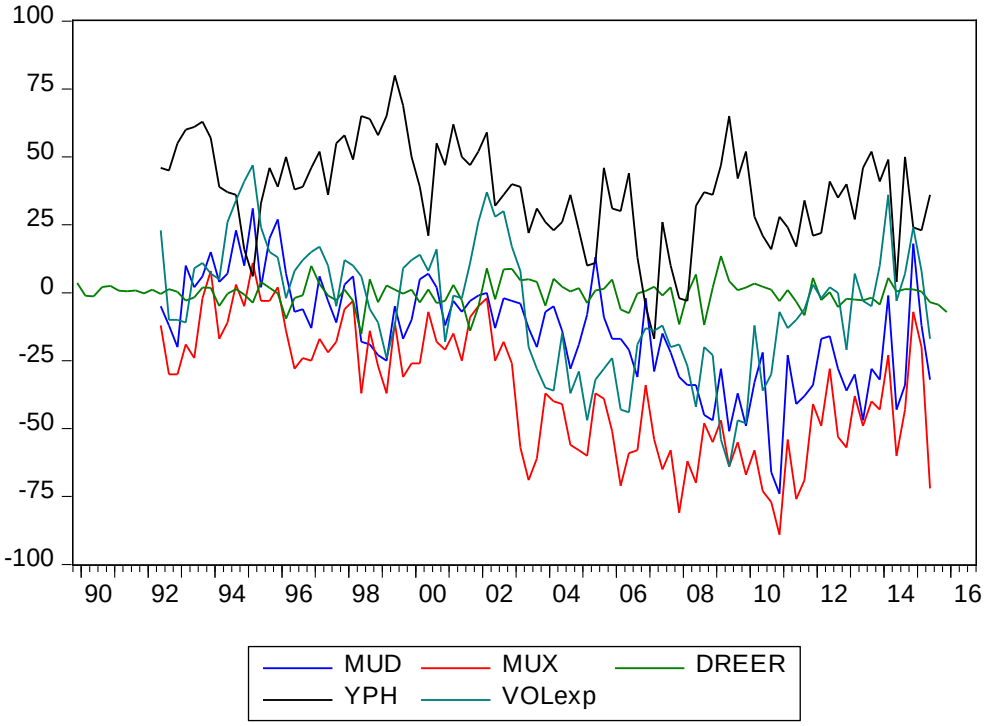
Concept	Proxy if no exact measure	Constructed as	Acronym[1]	Source row in BER[2]
Growth in average labour cost per unit produced		Survey balance statistic	ULC	R13
Growth in average cost per unit of raw materials		Survey balance statistic	URMC	R15
Growth in domestic price per unit produced		Survey balance statistic	PD	R16
Export labour cost pressure	Unit labour cost minus export unit price		ULC-PX	R14-R17
Growth in export price per unit produced		Survey balance statistic	PX	R17
Change in revealed competitive pressure	Change in the price–cost margin (domestic or exports)	Domestic (Export) rate of change in mark-up obtained as differential between rate of change of domestic (export) prices and rate of change in unit cost where rates of change are proxied by balance statistics	Domestic =MUD Export =MUX	R16-R13 R17-R13
Growth in employment	Numbers or hours	Growth in number of workers (balance) Growth in number of hours (balance)	EMPN EMPH	R.10 R10+R11
Growth in production	Production volume	Production volume (balance)	VOLPRD	R5
Cyclical indicator 1	Insufficient demand is a constraint	Survey balance statistic	CONS_D	R28
Cyclical indicator 2	Current stocks of raw materials in relation to planned production	Survey balance statistic	RMSTOCK	R18
Differential profitability growth (exports - domestic)	Differential pricing power	Differential between mark-ups (balances)	MUX - MUD	(R16-R13)-(R17-R13)
Growth in exports	Growth in export volume Growth in export orders	Volume of export sales (balance) Volume of export orders (balance)	VOLexp ORDexp	R4 R7
Growth in employment	Numbers or hours	Growth in number of workers (balance) Growth in number of hours (balance)	EMPN EMPH	R.10 R.10+R.11
Growth in domestic sales	Domestic sales volume Domestic sales orders	Domestic sales volume (balance) Domestic sales orders (balance)	VOLdom ORDdom	R3 R6
Relative pace of domestic orders to export orders	Domestic sales orders less export sales orders	(Domestic sales orders (balance)) - (Export sales orders (balance))	ORDdom-ORDexp	R6-R7
Growth in fixed investment		Fixed investment (balance)	FIXINV	
Efficiency investment plans	Year-ahead investment growth intentions (P&E)	Expected real investment in machinery and equipment in 12 months' time (balance)	INVME	R32
Change in interest rate concerns	Short-term interest rate is a constraint	Survey balance statistic, differenced due to non-stationarity	DCONS_R	R27
Current business confidence	General business conditions	Survey balance statistic	BCONF_C	R9
Business confidence in respect of one year ahead	Expected business conditions in 12 months' time	Survey balance statistic	BCONF_F	R33
Change in trade-induced competitive pressure	Extent to which the nominal exchange rate is overvalued or undervalued with respect to purchasing price parity.[3]	First difference or fourth difference in the real effective exchange rate where a higher value denotes a stronger real value for the rand.	DREER or D4REER	**South African Reserve Bank**

Notes: [1] Differenced series begin with D; [2] Non-BER sources in bold; [3] Positive values imply appreciation and greater competitive pressure.

Source: Author's own construction.

Figure 1 shows some selected variables: the domestic and export mark-ups (MUD and MUX), the change in the real effective exchange rate (DREER), labour productivity (YPH), and the export balance (VOLexp).

Figure 1: Selected data series



Source: Author's own construction.

4 Testing the hypotheses

I now consider the evidence for the three sets of hypotheses outlined in Section 2. As noted in the data section, the survey data consist mostly of aggregated replies of the up/same/down type, which previous literature suggests may be interpreted under some restrictions as a growth variable. The survey data are generally stationary.[8] The approach adopted here is to relate these variables in an autoregressive framework with explanatory variables lagged by at least 1 to lessen endogeneity concerns. For the most part only a single lagged dependent variable is required. Any missing error correction terms are subsumed in the equation residual, which will be monitored as part of the diagnostic testing. Estimation is carried out using *Eviews 9*.

(a) Results for selected hypotheses in Aghion et al. (2008)

A1. No trend reduction in manufacturing mark-ups is observed in the post-transition period.

Our evidence suggests that mark-ups have been squeezed in the post-transition period. The unit root test (ADF) equations for both MUD and MUX show them to be stationary over the sample period, 1994–2015. Confirming the pattern in Figure 1, autoregressive equations for both mark-

[8] Variables have been checked for stationarity using the ADF tests in *Eviews 9*. For the rare survey variable where non-stationarity cannot be rejected, e.g. percentage rating short-term interest rates to be a constraint, I use the first difference where that is stationary.

up series show highly significant negative deterministic trends, meaning that mark-up growth rates (negative on average) were declining at least until around 2010. This echoes the detailed sectoral and aggregate results in Zalk (2014a), which indicate that: 'There is clear general trend of declining PCMs both at the aggregate manufacturing level as well as across the bulk of manufacturing sectors from the 1993–1997 period as compared with the 2003–2007 period and a much sharper decline in the 2008–2012 period.'

These findings on the trend direction of the mark-ups are contrary to that of Aghion et al. (2008), though I do not examine the data prior to the 1990s, which constituted an important part of their dataset.[9] The implication of these falling trends in mark-ups is that the associated competitive pressure should have led to substantial growth in productivity under hypothesis *A2*. But did it?

A2. Greater competitive pressure increases manufacturing productivity up to an inflection point.

Our data allow us to investigate the effect on labour productivity of the domestic sales mark-up on both costs and exports. Granger causality test results are reported below for MUD and YPH and for MUX and YPH.

Pairwise Granger causality tests: 91 observations; max lag =2
MUD does not Granger cause YPH (p=0.0445)
YPH does not Granger cause MUD (p=0.3312)
MUX does not Granger cause YPH (p=0.0572)
YPH does not Granger cause MUX (p=0.2247)

There is some evidence of a causal effect from changes in mark-up to productivity growth. Table 2 presents some regression results where lags have initially been chosen to minimize the AIC.

Table 2: Dependent variable: balance of survey indicators for labour productivity YPH: Sample 1992Q2–2015Q2

YPH(-1)	0.624***	0.559***	0.472***	0.439***	0.190†	0.188†	0.117
MUD(-1)	0.008	-	-0.350**	-0.389**	-0.275*		
MUX(-1)		0.123†	0.392**	0.243†	0.265*		
MUX(-2)				0.232*	0.275**	0.269***	0.293***
MUX(-1)- MUD(-1)			-			0.270*	0.303***
INVME(-5)					0.261**	0.261**	
CONS_D(-1)					0.826***	0.832***	
RMSTOCK (-1)							0.688***
RMSTOCK(-2)							0.503*
Constant	14.01***	20.69***	28.54***	32.33***	-7.104	-7.351	27.40***
R_Squared	0.39	0.41	0.45	0.49	0.59	0.59	0.65
DW	2.21	2.20	2.15	2.05	1.99	2.00	2.02
AIC	8.212	8.178	8.125	8.093	7.909	7.887	7.747

Notes: Variables are balance statistics unless otherwise noted. YPH = labour productivity; MUD = domestic mark-up; MUX = export mark-up; INVME = planned year-ahead efficiency investment; CONS_D = demand constraint indicator; RMSTOCK = cyclical indicator of material stocks in relation to planned production.
† = significant at 10%; * at 5%; ** at 1% and *** at 0.01% DW is the Durbin Watson Statistic. Full diagnostics for heteroscedasticity autocorrelation and mis-specification (Ramsay) are only noted if tests are significant at 5%.

Source: Author's own construction.

Table 2 reports the influence of lagged mark-ups on labour productivity. Two additional variables are included: the cyclical indicator RMSTOCK and the indicator of machinery and equipment

[9] Both Aghion et al. (2008) and Rodrik (2008) question the reliability of the official statistics on the mark-up post 1996, which underscores the importance of the use of survey data in this paper. Aghion et al. (2008: 750) note that 'standard deviations in mark-ups increase substantially post 1996 for all sectors and increase even more markedly after 2000. This reflects increased volatility in the underlying series'. Rodrik (2008) refers to 'some important puzzles' on measured mark-ups.

investment intentions (INVME), which is available only at a forecast horizon of one year and therefore lagged by five quarters. The demand constraint variable is included as a cyclical indicator, and the alternative cyclical indicator of raw material stocks in relation to planned production is entered with one and two lags. Both these cyclical variables are inverse indicators of strong demand and they both appear as significantly positive, while the traditional economic literature has regarded labour productivity as counter-cyclical, although it has increasingly been argued in recent literature that it is pro-cyclical (Fernald and Wang 2016).

The negative effect of the domestic mark-up is robust across the range of specifications for productivity growth and significant except where it is entered without the foreign mark-up. This appears to offer part-support to the relationship hypothesized by Aghion insofar as the domestic mark-up is considered, though there seem no non-linear effects for either mark-up. The result raises some issues, however. For *A2* to hold, it should be possible to trace the domestic mark-up changes to trade conditions. But, as reported later when discussing hypothesis *EL2*, it appears that MUD is not causally responsive to changes in the real exchange rate.

The positive effect of the export mark-up on productivity volume is surprisingly significant and not easy to explain. One possibility is that when the incentive to produce exports is rising, labour is used more intensively, given that skilled labour is a quasi-fixed resource in the short run; there may also be scale economies. Another possibility is that a composition effect is at work whereby a rising export share (of goods with higher productivity than home sales) automatically generates higher productivity. However, although there is some evidence of significance for a variable representing the differential growth of exports and domestic sales, the inclusion of this variable does not substantially affect the mark-up coefficients, and in any case the effect becomes insignificant with the entry of the cyclical variable CONS_D with which it is correlated.

Returning to the domestic mark-up, it should be noted that the data refer to labour productivity, not multi-factor productivity. It is possible that what is being captured by the productivity variable is variation due to the shedding of labour when competitive pressure rises (the mark-up falls). The denominator of the productivity variable is of course just one part of the total process hypothesized in Aghion et al. (2008), where productivity growth is expected to translate into faster output growth. But if the dependent variable in Table 2 is changed from productivity to output, there is no significant effect for either of the mark-up terms. If rising domestic mark-ups do no more than affect the denominator via labour shedding, this suggests an absence of absorptive capacity or of an entrepreneurial culture that could underpin expansion, e.g. to switch production to the export sector or to expand domestic demand by efficient restructuring.[10]

It may reasonably be argued that the construction of the mark-ups is flawed, given that the mix of inputs differs between domestic and exported goods, with the former using more domestic products and labour inputs while exports are more import- and capital-intensive. To test whether this makes a substantial difference to the results we re-estimated the equations in Table 2 with alternative indicators of the mark-up. For the domestic mark-up we now took the difference between the balance statistics of the domestic selling price and average unit labour costs (rather than average total production costs). For the export mark-up we took the difference between the balance statistics of the export selling price and a simple average of the unit costs of labour and

[10] Roberts and Vilakazi (2015: 22) note: 'Implicit in the principle of increasing participation (through entry) is the assumption that by doing so, increased rivalry between firms will over time result in both static and dynamic gains from competition. Specifically, firms will not only compete on price to win over customers but will also develop their capabilities through investment and innovation in order to compete on product range, quality and efficiency, which are dynamic gains to society overall.'

raw materials. The only substantive difference was that the domestic mark-up was no longer significant, while the export mark-up continued to be strongly positively significant.

Overall there is only mixed and difficult-to-interpret evidence for *A2*. The results echo the negative findings from previous examination of the Aghion framework in Zalk (2014a).

(b) Results for selected hypotheses in Edwards and Lawrence (2008)

EL1. Trade liberalization reduces import costs for manufacturing.

There is good evidence in favour of this hypothesis. Import costs, as measured by unit raw material prices, are lower when the real effective exchange rate strengthens.

Table 3: Dependent variable: Balance of survey indicator for imported raw material price per unit URMC: Sample 1992Q2–2015Q2

URMC(-1)	0.778***	0.672***
DREER(-1)	-0.854**	
D4REER(-1)		-0.587***
Constant	11.75**	17.24***
R_Squared	0.65	0.66
DW	2.18	2.08
AIC	8.114	8.068

Notes: Variables are balance statistics unless otherwise noted. URMC = unit raw material cost; DREER = quarterly growth in real effective exchange rate; D4REER = annual version of DREER.

Source: Author's own construction.

These results are as expected: import costs fall, with a strengthening of the real exchange rate. The next question is: what further effects does that have?

EL2. Trade liberalization reduces the relative profitability of domestic sales vis-a-vis exports and thus results in increased exports of 'non-commodity' manufacturing.

The results of Granger causality tests are consistent with the hypothesis that only MUX is affected by the real exchange rate, while MUD is not so affected. This is consistent with the claim in Black et al. (2016) that upstream producers have considerable market power. One interpretation of the unresponsiveness of MUD to the real exchange rate is that firms pursue a cost-plus pricing formula that is insensitive to import competition. The effect of a change in the REER on MUX is, however, negative so that, insofar as trade liberalization is associated with a strong real exchange rate, there is no evidence that it will improve the relative profitability of exporting vis-a-vis domestic sales. This is not really surprising as the real exchange rate is 'regarded as a barometer of external competitiveness in manufacturing' (SARB 2008).

Pairwise Granger causality tests: 91 observations; max lag =2
DREER does not Granger cause MUD (p=0.6826)
MUD does not Granger Cause DREER (p=.6445)
DREER does not Granger cause MUX (p=0.0092)
MUX does not Granger Cause DREER (p=.6098)
Similar results are found for D4REER using a max lag =4

Table 4 details how MUX is affected by the real exchange rate.

Table 4: Dependent variable MUX: Sample 1992Q2–2015Q2

MUX(-1)	0.583***	0.496***
DREER(-1)	-0.923**	
D4REER(-1)		-0.483**
Constant	-1.597	-2.041
Trend	-0.249***	-0.300***
R Squared	0.65	0.66
DW	2.10	2.002
AIC	8.191	8.187

Notes: Variables are balance statistics unless otherwise noted. MUX = export mark-up; DREER = quarterly growth in real effective exchange rate; D4REER = annual version of DREER.

Source: Author's own construction.

Table 4 shows that the profitability of exports is reduced following an appreciation and increased by depreciation. Exporters, in other words, take the potential gain of depreciation partly in terms of increased margins; they react to appreciation by lowering the mark-up even though the costs of imported content are reduced.[11] A Wald test rejects that the effects of DREER differ significantly between rising incidences and falling incidences.

Of course a falling mark-up in response to an appreciation does not mean that prices are actually lower in the foreign currency, so the effect on exports is ambiguous. Table 5 tests how exports respond to a real appreciation.

Table 5: Dependent variable VOLexp: Sample 1992Q2–2015Q2

VOLexp(-1)	0.784***	0.752***	0.631***	0.660***
DREER(-1)	-0.560†		-0.654*	
D4REER(-1)		-0.343*		-0.498**
(ULC-XP)(-1)			-0.162†	
(ULC-XP)(-4)				-0.148*
ORDdom(-5)				-0.143*
Constant	-1.580	-1.900	3.739	4.091
R Squared	0.64	0.65	0.66	0.70
DW	2.11	2.05	2.03	2.18
AIC	8.147	8.131	8.132	8.069

Notes: Variables are balance statistics unless otherwise noted. VOLexp = export volume; DREER = quarterly growth in real effective exchange rate; D4REER = annual version of DREER; ULC = unit labour cost; XP = export price.

Source: Author's own construction.

Table 5 shows that a real appreciation causes the export volume to *decrease* whether we take a first or a fourth difference of the exchange rate. The result is robust to a number of specifications that include the first or fourth lag of the differential between unit labour costs and export prices. Since exports are often seen as compensating for a lack of domestic demand, the domestic orders variable is also entered, which improves the equation when entered with a lag of five quarters.

[11] Given that the MUD is unresponsive to DREER, as seen from the Granger causality test, the results can also be interpreted as the effects on relative mark-ups and incentives. The process here seems to work entirely through the export side, with mark-ups falling as trade competitiveness increases but with no discernible effect on domestic mark-ups, presumably because trade liberalization reduces costs and prices in equal measure.

The negative sign of the real exchange rate is not implausible or even surprising since, even with falling mark-ups and lower import costs, exports may still be priced as high as, or higher than, before in foreign currency.

Edwards and Lawrence (2008), using industry panel data from 1990 to 2004, argue that, imports being an important part of the cost base for much of manufacturing, the contribution of liberalized trade should, via this channel, help to increase exports by feeding into lower costs. Specifically, they argue that 'trade liberalisation in the 1990s not only increased imports but, by reducing both input costs and the relative profitability of domestic sales, also boosted exports' (p. 606). However, it is not clear what weight can be placed on the analysis, since they consistently find the same role for the real exchange rate in their export equations as obtained in this paper.[12]

(c) Results for selected hypotheses in Rodrik (2008)

R1. The manufacturing mark-up falls over the period since the transition to democracy.

Rodrik gives reasons to doubt the official raw statistics on mark-ups, arguing that it is implausible that mark-ups rose in sectors such as footwear, which faced intense competition from low-wage countries; he prefers to use comparative mark-ups between manufacturing and services, which show a trend fall from 1990. Rodrik's implicit hypothesis *R1* is the obverse of *A1*, so the same evidence found there may be used to support it. As noted earlier, there is evidence of a significant negative deterministic trend for both domestic and export mark-ups in the BER sample used in this paper.

R2. Manufacturing employment falls as the mark-up falls.

Rodrik's view is that manufacturing employment is adversely affected by trade liberalization and its consequences for profitability and mark-ups. It does seem that manufacturing profitability relative to that in finance and business services showed a trend fall from the early 1990s and extending beyond the financial crisis (Zalk 2014b). (It would indeed be surprising if economic activity were unresponsive to such relative change in profitability.) But in absolute terms was the fall in manufacturing employment that occurred over the period due to the effect on mark-ups? Put differently, did the pace of decline in the manufacturing mark-up directly influence the numbers employed in a significant way?

To answer these questions I regress employment growth in numbers (EMPN) and hours (EMPH) on both mark-ups. Although the mean of the balance statistics was substantially negative for both series, indicating a downward trend in the level of employment, there is no evidence that manufacturing employment growth, measured by either numbers or hours, was affected directly by either the domestic or the export mark-up. Nor was there any effect from the change in the real exchange rate.

The best set of equations for employment is shown in Table 6. A fourth lag on the dependent variable is included along with the first lag in the first column, as autocorrelation dies out more

[12] Edwards and Lawrence (2008) find additional effects on export volume for export taxes and tariffs included alongside the real exchange rate, particularly for non-commodity manufacturing, but not all these are significant when time dummies are included in the panel. The most consistent effect throughout appears to come from the real exchange rate itself.

slowly than is the case for other series, though it does appear stationary. It loses significance, however, when other variables are added and so it is excluded in the second column.[13]

Table 6: Dependent variable employment in hours; survey balances for employment in numbers (EMPN) and hours (EMPH): Sample 1992Q2–2015Q2

	EMPN	EMPN	EMPH
Lagged (1) Dep Variable	0.912***	0.510***	0.436***
Lagged (4) Dep Variable	-0.159*		
FIXINV(-1)		0.213*	0.486*
INVME(-5)		-0.176*	-0.392**
RMSTOCK(-1)		-0.489***	-1.023***
(ORDdom-ORDExp(-1))		0.155**	0.276**
Constant	-4.654**	-2.182	-0.002
R Squared	0.719	0.79	0.79
DW	2.155	2.08	1.92
AIC	7.517	7.263	8.509

Notes: Variables are balance statistics unless otherwise noted. EMPN = number employed; EMPH = employment in hours; FIXINV = fixed investment; INVME = planned year-ahead efficiency investment; RMSTOCK = cyclical indicator of material stocks in relation to planned production; ORDdom = domestic orders; ORDexp = export orders.

Source: Author's own construction.

The remaining columns augment the specification with variables representing planned investment decisions and cyclical indicators. The same specification appears appropriate for EMPN and EMPH. Total fixed investment growth (which includes structures) is positive for employment, whereas prior plans for efficiency investment (INVME) is negative. This underscores the idea that capital need not displace labour. Metal fabrication, plastics, transport, and agro-processing show co-movement of employment and capital investment (Zalk 2014c).

The ratio of raw material stocks to planned production, which is a (counter) cyclical indicator, is negative. There is a positive effect on employment when domestic orders rise faster than export orders, which is understandable as exports are in more capital-intensive sectors. The mark-up variables were not significant when entered in these employment equations, possibly because the analysis is undertaken at an aggregate level and the mark-up has different effects on upstream and downstream producers, with the former more sheltered from competition.

5 Extension to consider investment intentions

Aghion et al. (2008) stress that an increase in product market competition should have large positive effects of productivity growth in South Africa. As an extension of their research they suggest exploring the channel of influence, i.e. the impact of trade liberalization on competitive pressure. In that spirit I examine here the effect of trade liberalization on fixed capital investment in South Africa, which can be regarded as an intermediate link in the effect on labour productivity. While the authors of the three papers surveyed here do not explicitly deal with this issue, it seems reasonable to suppose that those pursuing a trade liberalization agenda would see it as positive for investment.[14] I focus here on year-ahead plans to carry out machinery and equipment investment (INVME). This category of investment is probably most associated with efficiency or labour-

[13] Using AIC with five lags and no trend, a unit root is rejected in an ADF test, although it is marginal at 10 per cent when the Schwartz criterion is used.

[14] In Rodrik's (2008) approach the issue is more complex because he sees trade liberalization not just as diverting investment from manufacturing to services but also as favouring highly capital-intensive sectors within manufacturing.

saving investment, in contrast to total investment, which includes expansionary outlay on structures and plant. For completeness, I also consider total manufacturing investment intentions, which are available for the current year (FIXINV).

I specify an investment equation with a lagged dependent variable where investment responds to indicators of business confidence recorded in the survey. I use the current balance statistic for 'general business conditions' and the forward-looking balance statistic for 'expected business conditions in 12 months' time'. The real exchange rate and the two mark-up variables were entered, but these were never significant, with or without the confidence indicators. Nor was the interest rate constraint significant.

Results are shown in Table 7. The first column for INVME shows investment responding to both current and forward-looking business confidence indicators. The second column shows that the current confidence indicator can be replaced by the indicators of cyclical demand. For current total investment plans, there is a similar structure where only the current business confidence indicator and not the forward-looking one seems relevant.

Table 7: Dependent variables INVME and FIXINV: Sample 1992Q2–2015Q2

	INVME		FIXINV
LAGGED DEP VAR	0.484***	0.485***	0.311**
BCONF_C(-1)	0.141*		0.133*
BCONF_F(-1)	0.131*	0.195**	
CONS_D(-1)		-0.623**	-0.370*
CONS_D(-2)		0.37*	
Constant	7.080***	20.146	31.255**
R Squared	0.67	0.69	0.61
DW	1.96	2.18	1.84
AIC	7.491	7.440	7.363

Notes: Variables are balance statistics unless otherwise noted. INVME = planned year-ahead efficiency investment; FIXINV = total fixed investment; BCONF_C = current business confidence indicator; BCONF_F = year-ahead business confidence indicator; CONS_D = demand constraint.

Source: Author's own construction.

The results clearly cast doubt on the importance of the effective exchange rate in inducing efficiency investment. Nevertheless, it may be argued that the business confidence indicator represents expectations on trade conditions. To understand the contribution of different economic factors to business confidence, I regressed both CONF_F and CONF_C on the real exchange rate, interest rate concerns, and the mark-ups. There is no effect of these variables for the current confidence indicator. However, CONF_F for the year ahead shows a strong influence on exchange rate and interest rate movements.[15]

The results for the forward-looking confidence indicator suggest that a strengthening real exchange rate and weakening interest rate may matter indirectly for planned efficiency investment. Nevertheless, the fact that the explanatory power of the confidence equation is not very high and that the variables do not register as significant when entered directly in the equation for INVME suggests that the effect may be relatively weak. There appears to be no effect for FIXINV. One possible implication of the finding for INVME is that efficiency investment can be sourced either

[15] I re-estimated the equation for INVME with 2SLS, replacing the lagged CONF_F term with the current term instrumented with its determinants shown in Table 8. The results were similar. The null of endogeneity was also rejected.

from imports or from upstream manufacturers that match import prices, as suggested by Black et al. (2016).

Table 8: Dependent variables BCONF_F and BCONF_C: Sample 1992Q2–2015Q2

	BCONF_F		BCONF_C
LAG(1)DEP VAR	0.665***	0.589***	0.99***
LAG(2)DEP VAR		0.165†	-0.206†
DREER(-1)	0.777*	0.711*	0.500
DCONS_R(-1)		-0.829***	0.118
Constant	0.991	0.598	-2.419
R Squared	0.47	0.57	0.71
DW	2.18	2.05	1.962
AIC	8.44	8.288	8.501

Notes: Variables are balance statistics unless otherwise noted. BCONF_C = current business confidence indicator; BCONF_F = year-ahead business confidence indicator; DREER = quarterly growth in real effective exchange rate; DCONS_R = first difference of interest rate constraint.

Source: Author's own construction.

6 Concluding comments

This paper uses survey data to examine some controversial and unresolved issues regarding the South African economy since the transition in the early 1990s. The context of the study is a contrast between two views in the literature: a liberal economy perspective, as presented in Aghion et al. (2008) and Edwards and Lawrence (2008), versus the more interventionist ideas of Rodrik (2016). The role of the mark-up of prices over cost is central to these contending stories. In the first account the mark-up must be reduced to spur competitiveness, whereas the second account worries that targeting mark-ups will erode manufacturing profitability, especially in comparison with other sectors, and thus impede growth.

The paper shows that lower mark-ups on *domestic sales* do appear to be associated with higher labour productivity. However, there seems to be no corresponding effect on output, suggesting that the effect operates mainly through labour shedding. Furthermore, movements in the domestic mark-up do not seem to be caused by the real exchange rate, to which the domestic mark-up is unresponsive. There is some weak evidence of an indirect effect from trade to productivity via a response of efficiency investment to business confidence, where the latter is boosted by a strong real exchange rate. However, the effect is tenuous.

In contrast to the positive effect on productivity of lower domestic mark-ups, the productivity effect of a lower export mark-up is negative, suggesting that the competitiveness story is not in play. The result here does not appear to be due simply to a composition switch from domestic to export production.

Clearly the simple story of increased productivity induced by greater competitive pressure originating in freer trade is not compatible with the data. But the more subtle argument in the same vein is that a trade regime that keeps import prices low can benefit export growth. This is clearly an important issue, given that all participants in the debate agree on the importance of manufacturing exports. There may also be additional indirect benefits from greater openness induced by exchange rate policy, such as imitation effects or supply-chain effects on quality and technology.

The evidence presented here shows that a rising real exchange rate (appreciation of the REER) results in falling unit raw material costs as expected. However, exporter profitability still suffers

because the mark-up also falls, presumably to keep prices from rising too much in foreign currencies. There is evidence, too, that a real appreciation causes the export volume to decrease. Nevertheless, as far as employment is concerned, there seems no direct link between the real exchange rate and total manufacturing employment so that any negative employment from lower export volumes is perhaps compensated by a positive effect on domestic goods employment, where input costs will be lower but where the mark-up on domestic sales seems unresponsive.

Manufacturing employment seems to reflect investment plans—positive for total investment but negative for planned efficiency investment. While there is no direct effect from trade competitiveness, indirectly a stronger exchange rate appears to stimulate efficiency investment.

Overall, the evidence suggests that the use of an overvalued exchange rate to increase competitiveness is likely to have negative effects on exports and possibly on employment. In that respect the findings in this paper may be said to favour the Rodrik perspective more than that of Aghion et al. or Lawrence and Edwards. Nevertheless, some of the results above also suggest that domestic mark-ups are unresponsive to trade pressure and, as noted earlier, this is consistent with continued rent-capture in some upstream sectors of manufacturing, despite the fact that both domestic and export mark-ups have trended down on average since the transition.

The dilemma that these results and views create for policy makers requires nuanced policies that combine trade instruments with those of industrial policy. In particular the real exchange rate, a single instrument, cannot generate targeted outcomes for both competition and growth where these two objectives are not perfectly aligned. Competition is two-faced and the balance of forces between destruction and creation is dependent on the institutional context that facilitates start-ups, entry, and expansion. Outside of textbook economics, not all effects of liberal trade policies are benign. In some contexts, free trade can deter foreign direct investment, encourage hot portfolio flows that crowd out long-term projects, and constrain the development of supply networks (Black et al. 2016). The overall conclusion is that trade policy needs to work in tandem with industrial policy to be effective.

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