‘Old’ Europe’s Wage Dynamics and Trade Imbalances: Is There a Link?

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Abstract

Rising relative wage rate is shown to have had strong – and negative – effects on the trade balance/GDP ratio for the EU-14, at least in the longer run. It is correct to expect such effects in individual members of the group – in particular in countries that have the tendency to run high and persistent trade deficits. It follows that external rebalancing should be achieved through a sufficiently strong fall in the relative wage rates. This is not to claim that the EU-14 (and its members suffering trade deficits) ought to attempt a policy of ‘internal devaluation’ (meaning cuts in nominal wages). A constructive alternative would be to achieve a fall in the relative wage rates through faster growth of *German* nominal wage rates. Faster growth in German wage rate can be expected to reduce the price-competitiveness of German products, thus resulting in a slowdown of growth of German exports and a faster growth of its imports. Consequently, the trade deficits of the EU-14 group would be reduced.

JEL: F14, F41, F24

Keywords: European Union, trade imbalances, relative wages, relative productivities

Introduction

Germany’s formidable external competitiveness, represented by its gigantic and persistent trade surpluses, is a (widely acknowledged) source of problems troubling some of Germany’s trade partners – and many of the ‘old’ members of the European Union in particular. The problems are especially acute for the Southern flank of the euro area where the unit labour costs have increased enormously relative to Germany’s. One policy option these countries have is ‘internal devaluation’ – that is a set of actions (including some labour market reforms) resulting in a sufficiently strong deflation in wages (and prices, in due course). Of course, suppression of wages (and thus of domestic demand) is a bitter medicine if only because it is almost certain to provoke a recession of unforeseeable depth and length. In the first place it may help reduce the trade deficit (or even generate a trade surplus) by reducing demand for imports rather than promoting higher exports.

A more attractive alternative could be to achieve competitiveness gains through policies promoting much faster growth of labour productivity. Of course, achievement of fast growth of labour productivity (primarily implying a fast change in the structure of production and improved quality of exportable goods and services etc) cannot be a bad idea though it is not quite clear how this could be effectively engineered. The failure of the Lisbon Agenda (and other such policy initiatives) promising a speedy structural change, quality improvements and thus advances in productivity is a case in point.

Productivity improvements did not seem to matter

The major problem with the productivity alternative is that in actual fact the ‘old’ EU has on the whole performed much *better* than Germany in terms of labour productivity growth (see Figures 1 and 2) in the long run. On labour productivity Germany has been losing out to the rest the ‘old’ EU

secularly. Germany's super-competitiveness cannot be squared with evidence on its relative productivity performance.

Fig. 1 Growth rate of relative (EU-14 over Germany) labour productivity, 1961-2014

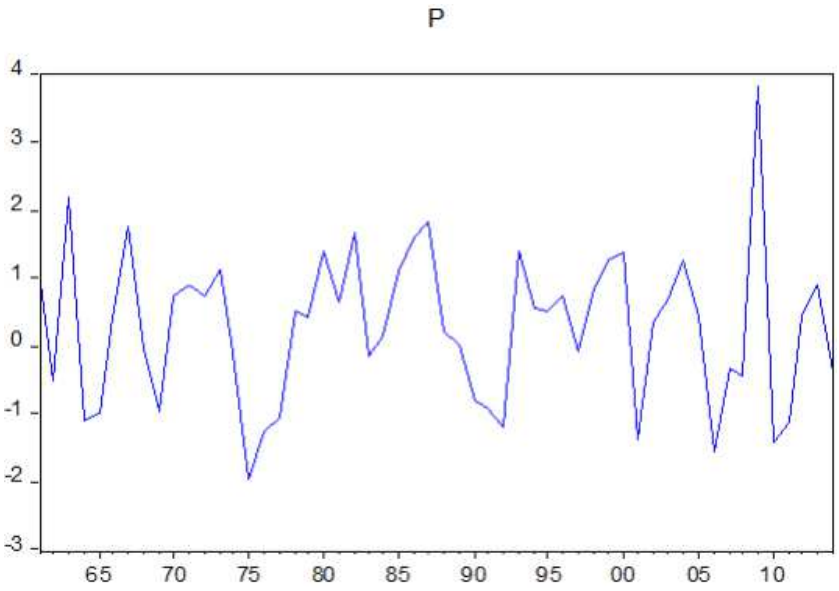
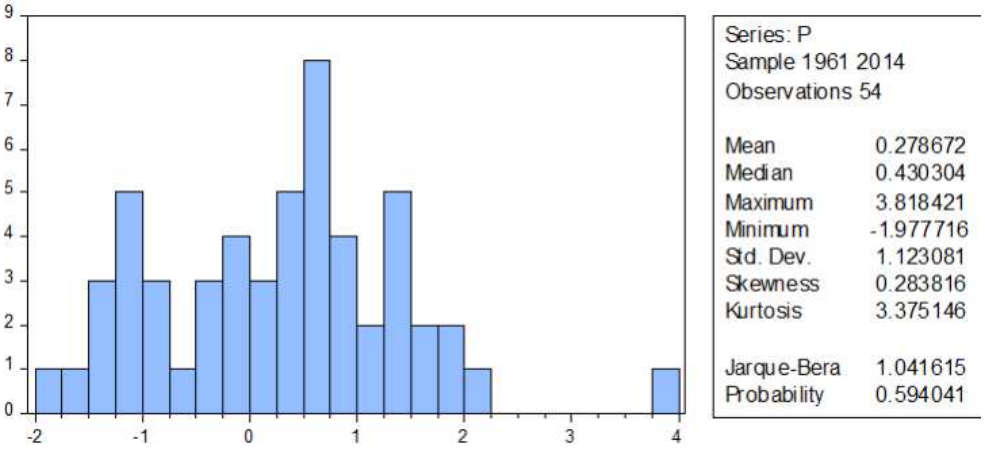


Fig. 2 Histogram and descriptive statistics for P



Is there a relationship between the rate of change of EU-14 relative labour productivity and its trade (in goods and non-factor services) balance (as GDP share) with Germany? That question is difficult to answer because AMECO reports the united Germany's trade balances starting from 1992 (while its statistics on relative wage and productivity promise to cover the whole period starting in 1960). Besides, the changing German competitiveness vs. the EU-14 need not be reflected solely by its trade balances with the EU-14. The rising German competitiveness may be (and probably is) reflected by German exports driving out the Italian, French or British goods from third countries' markets. It follows that even if the united Germany's trade balances with the EU-

14 were known for the years 1960-1991, it might still make more sense to consider the *overall* trade balance/GDP ratio for the EU14. That ratio for the EU-14, denoted as B, can easily be calculated from AMECO data for the whole period considered (see Figures 3-4).

Fig. 3 Trade (goods and services) balance/GDP for EU-14

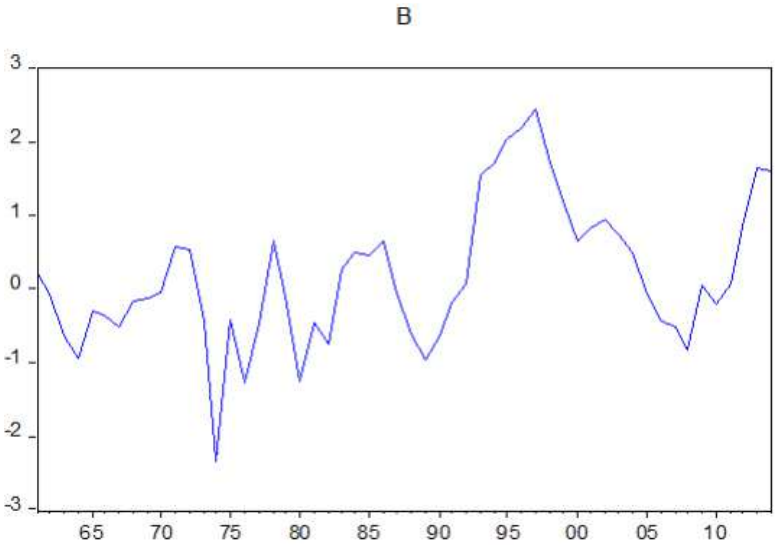
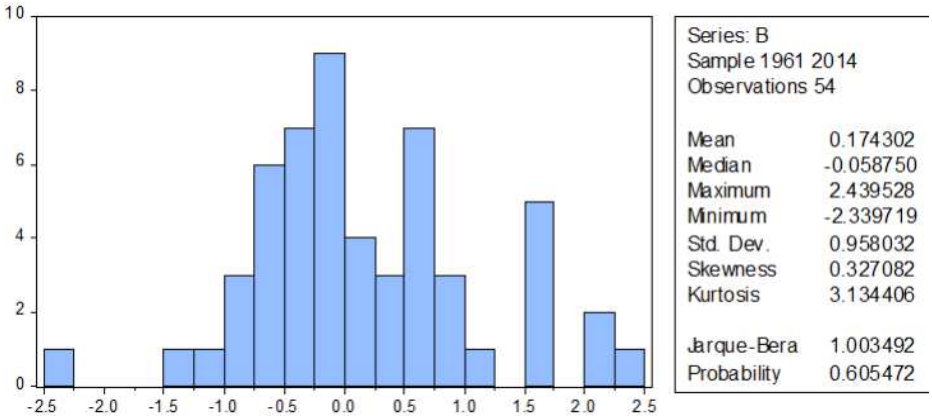


Fig. 4 Histogram and descriptive statistics for B



The overall B is not persistently negative. Average B for the whole period (1961-2014) is slightly positive and the median slightly negative. B is not persistently negative also because the EU-14 includes persistent trade *surplus* countries such as Sweden, Ireland (since 1985), Austria and the Netherlands. The latter two countries have all along been tightly aligned with Germany (primarily through the fixed exchange-rate pegs and the resulting forced harmonisation of wage dynamics).

Some simple econometrics in search for long-term relationships

As P seems stationary (which is also confirmed by the breakpoint unit root tests) and B seems I(1) – and thus non-stationary – it is quite clear that the presence of a long-term relationship between the two items may seem rather unlikely.
The *index* (or level) of EU-14 relative productivity is of course I(1), thus non-stationary. It is tempting to seek co-integration (that is the presence of a long-run relationship) between B and the productivity index. However, the Autoregressive Distributed Lags 'Bounds' (Pesaran et al., 2001) models regressing B on the productivity level produce unexpected results. The productivity level enters the co-integrating (long-run) equation with a negative sign (see Table 1). If anything, there is some evidence that higher relative labour productivity may have *lowered* the trade balance/GDP ratio in the long run. Moreover the short-term impacts on B of a rising productivity level also turn out to be negative. These results do not seem to make much sense. Fortunately both impacts are rather tiny and, in addition, highly insignificant in statistical terms. It is safe to conclude that the impacts in question do not really matter. Relating the increase in B (that is D(B)) to P through Ordinary Least Squares is of course legitimate – but similarly unsuccessful.

The ARDL approach formally confirms the absence of a long-run relationship between P and B. While the bounds Fstatistics value for the ARDL model with unrestricted constant is 5.5 (and thus rejects the null hypothesis of 'no long-run relationship' at 5% significance), the second critical bounds statistics (the t-statistics) equals -2.463 and thus cannot reject the null – even at 10% significance.

Table 1
ARDL Cointegrating and Long-Run Form
Dependent Variable: D(B)

Selected Model: ARDL(4, 4)

Sample: 1961 2014
Included observations: 50

Cointegrating Form

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(B(-1))	0.042590	0.129553	0.328742	0.7442
D(B(-2))	0.216689	0.126741	1.709699	0.0955
D(B(-3))	0.323996	0.133544	2.426132	0.0201
D(P)	-0.086382	0.072810	-1.186400	0.2428
D(P(-1))	-0.001951	0.083795	-0.023280	0.9815
D(P(-2))	-0.081319	0.079606	-1.021516	0.3135
D(P(-3))	-0.124924	0.066248	-1.885697	0.0670
D(M)	-1.248868	1.057379	-1.181098	0.2449
D(M2)	-3.387309	0.834528	-4.058952	0.0002
C	0.167220	0.086262	1.938522	0.0600

CointEq(-1)	-0.248563	0.084602	-2.938014	0.0056

Cointeq = B - (-0.6835*P -0.4487*M -8.4323*M2)

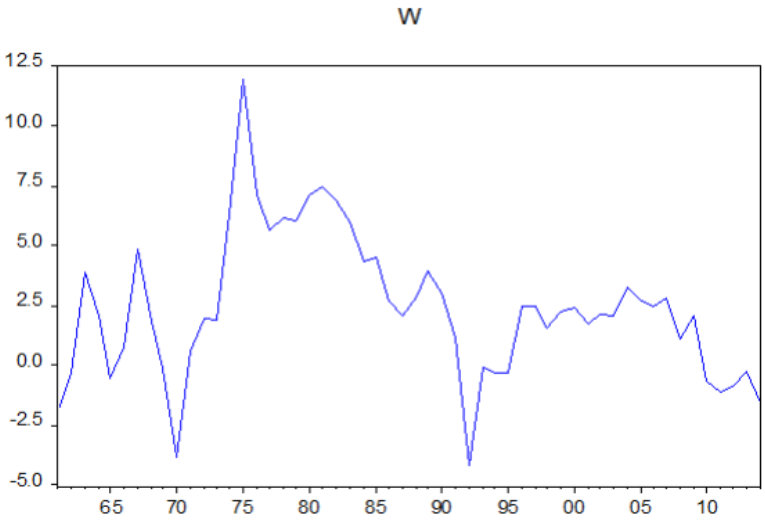
Long Run Coefficients

Variable	Coefficient	Std. Error	t-Statistic	Prob.
P	-0.683488	0.898496	-0.760702	0.4515
M	-0.448651	0.710440	-0.631512	0.5315
M2	-8.432343	3.804966	-2.216142	0.0327

Enter relative wages

W, the rate of growth of the nominal wage rate for the EU-14 relative to Germany, appears to be non-stationary (see Figure 5). That impression is confirmed formally by the unit roots test (also allowing for the possible presence of a breakpoint). D(W) is confirmed as stationary.

Fig. 5 Growth rate of the wage rate for EU-14 relative to Germany, 1961-2014



ARDL with B as the dependent variable and both P and W as explanatory variables (plus the relevant time-dummy variables) produce the two testing statistics (F and t) that reject the null hypothesis of ‘no long-run relationship exists’ at 1% and 2.5% significance levels respectively. For the ARDL model with unrestricted constant the Fstatistics equals 6.862 and the t-statistics equals -

3.9747. (The 1% critical bound for the former statistics is 6.36 while the 2.5% bound for the latter statistics is -3.80.) Even if the finite-sample critical bounds for the case considered might be less 'permissive', there is little doubt that allowing, additionally, for W proves more productive. Other usual tests applied to that ARDL model (on residuals and estimates' stability) are also passed satisfactorily. Thus it makes sense to have a look at that model's co-integrating and long-run forms (see Table 2).

The co-integrating form indicates that *increases* in P and W (both lagged one year) do not really matter as far as D(B) is concerned. What matters for the short-term dynamics is the error-correction term (the cointEq(-1) term in the last row in the upper panel in Table 2). That term enters the equation for D(B) with a proper (negative) sign, is rather large in absolute terms (suggesting fast correction) – and is highly significant statistically.

Both coefficients in the long-run form which is tying up B with P and W appear quite large and negative. This makes sense with respect to the W variable: in the long run a lower trade balance should be associated with a falling relative wage rate. However, the negative association between the productivity growth rate and the trade balance is not consistent with common sense. On the other hand, the long-run coefficient for P is not statistically significant. A possible conclusion to all that may be that the improvements in productivity have not mattered, during the 53 years considered, as far as the EU-14 trade balance/GDP ratio is concerned, either in the long run, or in the short.

Table 2

ARDL Co-integrating and Long-Run Form

Dependent Variable: D(B)

Selected Model: ARDL(1, 0, 1)

Sample: 1961 2014
Included observations: 53

Cointegrating Form

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(P)	-0.004414	0.050547	-0.087323	0.9308
D(W)	0.009125	0.037113	0.245877	0.8069
D(M)	-1.598760	0.935795	-1.708451	0.0943
D(M2)	-3.437690	0.673784	-5.102062	0.0000
C	0.389627	0.112455	3.464750	0.0012
CointEq(-1)	-0.324549	0.078795	-4.118890	0.0002

Cointeq = B - (-0.1875*P -0.2220*W -1.3578*M -7.0229*M2)

Long Run Coefficients

Variable	Coefficient	Std. Error	t-Statistic	Prob.
P	-0.187458	0.221421	-0.846615	0.4016
W	-0.222050	0.077132	-2.878843	0.0060
M	-1.357823	0.520684	-2.607768	0.0122
M2	-7.022914	2.321507	-3.025153	0.0041

The previous conclusion suggests dropping the productivity variable from the list of the determinants of the trade balance. One determinant that may be worth retaining, at this stage, is the wage variable W.

An ARDL model relating B to W (and two time-dummy variables) has excellent 'bounds' statistics. The F-statistics is 12.74 (much in excess of 7.84 sufficient, in this case, for 1% significance); the t-statistics is -4.98 (much less than -3.22 sufficient for 1% significance). Other usual tests (on residuals and parameter stability) are passed with flying colours. Thus, the existence of a long-run relationship between B and W is highly probable. The corresponding co-integration and long-run coefficients are in Table 3, the ARDL model itself in the Appendix.

Table 3
Co-integrating and Long-Run Form
Dependent Variable: D(B)

Selected Model: ARDL(4, 5)

Sample: 1961 2014
Included observations: 49

Cointegrating Form

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(B(-1))	0.253379	0.135104	1.875433	0.0689
D(B(-2))	0.294992	0.137478	2.145739	0.0387
D(B(-3))	0.265583	0.133757	1.985558	0.0547

D(W)	0.033841	0.044446	0.761398	0.4514
D(W(-1))	0.061142	0.057653	1.060510	0.2960
D(W(-2))	0.065934	0.048292	1.365328	0.1806
D(W(-3))	0.089406	0.041258	2.166990	0.0369
D(W(-4))	0.060925	0.040428	1.507002	0.1405
D(M)	-1.353155	1.033279	-1.309573	0.1986
D(M2)	-3.558074	0.745066	-4.775517	0.0000
C	0.581139	0.155404	3.739526	0.0006
CointEq(-1)	-0.508496	0.124259	-4.092237	0.0002

Cointeq = B - (-0.2466*W -1.1638*M -5.3044*M2)

Long-Run Coefficients

Variable	Coefficient	Std. Error	t-Statistic	Prob.
W	-0.246601	0.060346	-4.086421	0.0002
M	-1.163821	0.356477	-3.264781	0.0024
M2	-5.304440	1.348115	-3.934709	0.0004

The long-run coefficient for W is properly signed and highly significant in statistical terms. However, the lagged *changes* in W are really inconsequential for the short-run dynamics which is largely determined by the error-correction adjustments.

Caveats

The validity of conclusions suggested by the econometric models reported above hinge – to a substantial degree – on the quality of the underlying data. The data, available from Eurostat's AMECO database, may in fact be of imperfect quality. However, no better source of data on the items considered seems to exist at present. The working assumption adopted here is that the AMECO data properly reflect the developments bearing on the reported productivity indices (including, inter alia, ongoing qualitative upgrading of the goods produced or the changes in the sectoral composition of output).

The global (and European) economic scenes have been changing since 1960 (e.g. with respect to the prevailing international trade arrangements, exchange rate regimes, incidence of 'oil price shocks' etc.). Modelling has attempted to allow for eventual 'structural breaks' by introducing 'time dummy variables'. The time dummy variable for the 'Bretton Woods' years (1960-1973) proves significant. However, the time dummy variable for the years 1992-2014 – i.e. the period following the German unification – proves redundant. Quite unexpectedly, the dummy variable for the 'annus horribilis' (2009) has also proved superfluous (unlike the highly significant and 'influential' time dummy for 1974, the year of the first 'oil price shock'). As the preferred model (see Table 3 and the Appendix) passes the customary *stability* tests (CUSUM etc.),'with flying

colours', it may be reasonable to assume that the impacts of the ('structurally') changing economic environment have been reflected with a satisfactory precision. (See also the Appendix graph showing the closeness of the actual and 'fitted' trade balance/GDP levels.)

Another issue that may need a comment is about the analysis being 'dichotomic' – i.e. distinguishing Germany and the rest of the 'old' EU. The treatment of the EU-14 as a single entity characterised by three aggregate indicators (P, B, W) may seem odd, given the fact that the members of the group have differed on many counts, often quite radically. It is obviously possible to build separate models for individual EU member countries – with country-specific variables P, B and W (see Footnote 11). However, lumping together all 'old' EU countries (excluding Germany) may make sense because of the decisive role which the German wage policies seem to have played in destabilising the entire EU (see e.g. Bibow, 2013, 2012, 2005, 2001, or Laski and Podkaminer, 2011). Working with aggregates for the EU-14 naturally says a lot about the group's well-defined counterpart – Germany. Working with the data for individual countries (let us say for Italy) does not lead to clear-cut policy conclusions because in that case Italy's counterpart, defined as 'the rest of the EU-15', would include Germany as well as all other countries.

Policy conclusions

There is no evidence that gains in relative labour productivity have had a positive effect on the trade balance/GDP ratio for the EU-14. Actually, the effects of improving productivity are highly uncertain – at least as far as the trade balance goes. Still, productivity gains can have positive trade effects for some members of the EU-14 group. Besides, achieving productivity improvements remains a worthy task on other grounds.

Rising relative wage rate is shown to have had strong – and negative – effects on the trade balance/GDP ratio for the EU-14, at least in the longer run. It is correct to expect such effects in individual members of the group – in particular in countries that have the tendency to run high and persistent trade deficits. It follows that external rebalancing should be achieved through a sufficiently strong fall in the relative wage rates.

This is not to claim that the EU-14 (and its members suffering trade deficits) ought to attempt a policy of 'internal devaluation' (meaning cuts in nominal wages). A constructive alternative would be to achieve a fall in the relative wage rates through faster growth of *German* nominal wage rates. Faster growth in German wage rate can be expected to reduce the price-competitiveness of German products, thus resulting in a slowdown of growth of German exports and a faster growth of its imports. However, the mere price effect of stronger wages (and unit labour costs) would probably be insufficient to narrow the existing trade imbalances significantly. But a stronger growth in the wage rates should be expected to positively affect the macro aggregates: the (secularly stagnant) German wage bill, its household income and consumer demand – including the demand for exportable goods and services (and imported goods and services). The income effects of rising wage rates may be more important than the price effects (as recently suggested by e.g. Schröder, 2015).

Whether the alternative of inducing much faster growth of wages in Germany is practicable is another matter. But it can be argued that without that alternative being followed the European Union will remain a stagnant area plagued by recurrent crises caused by imbalanced trade between its Member States (Laski and Podkaminer, 2012; Podkaminer, 2015).

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APPENDIX: ARDL model underlying the co-integrating and long-run form in Table 3

Dependent Variable: B
Method: ARDL

Sample (adjusted): 1966 2014
Included observations: 49 after adjustments
Maximum dependent lags: 4 (Automatic selection)
Model selection method: Akaike info criterion (AIC)

Dynamic regressors (5 lags, automatic): W
Fixed regressors: M M2 C
Number of models evalulated: 24
Selected Model: ARDL(4, 5)

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
B(-1)	0.658275	0.134626	4.889671	0.0000
B(-2)	0.095765	0.169480	0.565053	0.5755
B(-3)	-0.033586	0.166732	-0.201440	0.8415
B(-4)	-0.294053	0.135850	-2.164533	0.0371
W	0.052236	0.044355	1.177689	0.2466
W(-1)	-0.092886	0.054085	-1.717421	0.0945
W(-2)	-0.012867	0.053518	-0.240426	0.8114
W(-3)	0.020046	0.050960	0.393379	0.6964
W(-4)	-0.026929	0.050934	-0.528716	0.6002
W(-5)	-0.081050	0.038614	-2.098967	0.0429
M	-0.667566	0.223756	-2.983455	0.0051
M2	-3.042621	0.585027	-5.200823	0.0000
C	0.673899	0.160405	4.201226	0.0002

R-squared	0.815767	Mean dependent var	0.227858
Adjusted R-squared	0.754356	S.D. dependent var	0.982581
S.E. of regression	0.486991	Akaike info criterion	1.621169
Sum squared resid	8.537770	Schwarz criterion	2.123080
Log likelihood	-26.71864	Hannan-Quinn criter.	1.811593
F-statistic	13.28375	Durbin-Watson stat	1.676908
Prob(F-statistic)	0.000000		

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

Below: Actual and fitted B for the above ARDL model.