Economics and Finance Working Paper Series

Çiğdem Börke Tunalı and Jan Fidrmuc

State Aid Policy in the European Union

February 2015

http://www.brunel.ac.uk/economics

STATE AID POLICY IN THE EUROPEAN UNION[*]

Çiğdem Börke Tunalı[†] and Jan Fidrmuc[‡]

January 2015

Abstract

Industrial policy is an important tool of economic policy-making, especially so since the onset of the current global financial crisis in 2008. However, only relatively few empirical studies consider the macroeconomic effects of industrial policy, especially for the European Union countries. In this study, we investigate the effect of state aid policy on economic growth and investment, using a panel data set which covers 27 European Union countries over the period 1992-2011. Our results suggest that state aid policy is not an effective tool to achieve higher economic growth and investment rates.

Key Words: European Union, State Aid, Solow Model, Growth, Investment

JEL Codes: E22, E61, L50, O47,

1 Introduction

Recently, increasing concerns about the international competitiveness of European countries together with their deindustrialisation (Bianchi and Labory, 2011: 130; Legarda and Blazquez, 2013: 3) have stimulated a new debate about industrial policy. This is especially true now in the context of the Global Economic and Financial Crisis. During the crisis, the European Union has set out a new integrated industrial policy strategy which emphasizes the importance of strong and diversified manufacturing sector for the competitiveness and job creation potential of the European Union (European Commission, 2010: 3). The rising importance of industrial policy as a tool of economic policy making in the European Union countries, moreover, is compounded by the fact that the EU competition policy simultaneously imposes strict limits on the ability of the Member States to pursue their own industrial policy objectives. Therefore, industrial policy and its effects is an issue of increasing importance, in particular in the context of European integration.

Yet, the number of studies that examine the effectiveness of industrial policy in European Union countries is low. In this paper, we try to fill this gap in the literature by investigating the effects of

growth in a way that would not occur in the absence of such intervention

From the above discussion, it is obvious that the success of industrial policy depends considerably on the political system and institutions of the country in question. However, there is always a risk of government failures even in countries with well-functioning political systems. Therefore, in recent years there has been a trend towards a new, "soft", industrial policy which provides for a more facilitative and coordinating role of the government (Warwick, 2013: 23, 24).

Existing studies about European industrial policy can be classified into two main groups. In the first category, there are studies which investigate the effects of industrial policy at the country level while, in the second category, industrial policy is examined at the firm level. Gual and Jodar-Rosell (2006), Aghion et al. (2011) and Stöllinger and Holzner (2013) fall into the first category. Since the main instrument of industrial policy in the European Union countries is state aid, all of these studies consider state aid as their main independent variable. Gual and Jodar-Rosell (2006) examine the effect of vertical state aid policy on multi factor productivity of the manufacturing sector in 11 European Union countries over the period 1992-2003. According to their results, vertical state aid has a positive effect on productivity growth. Aghion et al. (2011) find a positive effect of the total sectorial aid to industry and services on the exports of manufacturing and services over the period 1992-2008 in 12 European Union countries. Furthermore, by including an interaction term between state aid and financial development, they conclude that state aid is more effective in financially less developed countries. Similarly, Stöllinger and Holzner (2013) try to explain the impact of state aid on value added exports (defined as the value added generated by the country concerned but absorbed in another country) for 27 European Union countries using a data set over the period 1995-2011. They also examine whether effective governments are more successful in terms of applying state aid policy. They find that while state aid to manufacturing increases export competitiveness, government effectiveness has only a minor impact on the success of state aid policy.

The studies that investigate industrial policy at the disaggregated (firm, sectorial or regional) level are much more numerous Gi8sconcl(203o45onal)

systems, LPS) which promotes

announcement of State Aid Action Plan (SAAP), whose main aim is *"less and better targeted state aid"* (European Commission, 2005), state aid rules have become more transparent and easier to implement (Kassim and Lyons, 2013: 11). Thus, oversight of state aid policies of member countries is

4 Data and Methodology

In our empirical model, we draw on an unbalanced panel data set of 27 European Union countries covering the period 1992-2011. Gross fixed capital formation, population growth and gross domestic product (GDP) data were obtained from the Annual Macro-Economic Database of the European Commission's Directorate General for Economic and Financial Affairs (AMECO) and the data on

significance levels.[6] Therefore, we conclude that our variables are stationary and there is no risk to encounter spurious regression results.

Table 4 summarizes the results of fixed effect OLS regressions. Column 1, 2, 3 and 4 show the effects of total state aid, state aid to industry and services, horizontal state aid and sectorial state aid on economic growth, respectively; while column 5, 6, 7 and 8 show the effects of one-period lagged values of these variables on economic growth. The investment and population growth have the expected signs and are statistically significant. The dummies for the EU enlargement and the recent crisis are significant as well, the former appearing with a positive sign (demonstrating the acceleration of growthexperienced by the new member states after their EU accession) while the latter is, not surprisingly, negative. In contrast, none of the state aid variables has a statistically significant and positive effect on economic growth. While the total state aid and state aid to industry and services are not statistically significant, horizontal and sectorial state aid are significant at the ten and one percent levels, respectively, but have negative signs. However, their coefficients are very close to zero. The lagged results are very similar to the contemporaneous ones. The only difference is that horizontal state aid becomes statistically insignificant. In summary, state aid does not appear to have a positivm(con)9(t)-4(em)

regression is underidentified is rejected in all of our regressions. This result suggests that our instruments are relevant and sufficiently correlated with the endogenous variable. Furthermore, our regressions pass the Hansen's J Test of overidentification. In this test, the joint null hypothesis states that the instruments are valid and we cannot reject this hypothesis in any of our regressions. This means that our instruments are not strongly correlated with the dependent variable of the original model. Finally, we check the strength of our instrumental variables. Kleinbergen-Paap F statistic is below the critical value[8], implying that the bias resulting from using 2SLS instead of OLS is greater than 10 percent in all of our regressions except the one with horizontal state aid (Stock and Yogo, 2005). Specifically, this statistic is around 3 which is far below the critical value for the sectorial state aid regression. Thus, these results indicate that our instruments are not very strong. The limited

We estimate two models in which we use economic freedom and political stability indexes together with state aid and its subcomponents as explanatory variables.[10] Economic freedom and political stability indexes were obtained from the website of Heritage Foundation and the Worldwide

investment; while columns 5-8 show the effects of one-period lagged values of these variables on investment. The current values of economic freedom have a statistically

In contrast, our results confirm that both economic freedom and political stability have a positive and statistically significant effect on investment. Furthermore, the total state aid and state aid to industry and services may affect investment positively if the political environment is stable. Yet, these results need further investigation because of the potential endogeneity of the state aid variables.

When we consider all of these results, we conclude that state aid is not an effective tool in terms of fostering economic growth or investment in the European Union countries. This does not imply, however, that state aid is entirely pointless. First, we find, reassuringly, that state aid does not lead to lower growth (at least not consistently, although some of our coefficient estimated do turn out significantly negative). Thus, despite its

An Analysis of Deindustrialization and External Imbalances Europe." ESADEgeo Position Paper, Paper No: 31.

Liebowitz, S.J.; Margolis, S.E. (1990). "The Fable of the Keys." *Journal of Law & Economics* 33 (1), 1–25.

Maddala, G. S., Wu, S. (1999). "A Comparative Study of Unit Root Tests with Panel Data and a New Simple Test." *Oxford Bulletin of Economics and Statistics, Special Issue*, 631-652.

Martin, P., Mayer, T., Mayneris, F. (2011). "Public Support to Clusters: A Firm Level Study of French Local Productive Systems." *Regional Science and Urban Economics* 41(2), 108-123.

Pack, H., Saggi, K. (2006). "Is There a Case for Industrial Policy? A Critical Survey." *The World Bank Research Observer* 21(2), 267-297.

Rodriguez-Clare, A. (2007). "Clusters and Comparative Advantage: Implications for Industrial Policy." *Journal of Development Economics* 82, 43-57.

Rodrik, D. (2008). "Normalizing Industrial Policy." Commission on Growth and Development, Working Paper No: 3, The World Bank.

Schaffer, M. E. (2010). "xtivreg2: Stata module to perform extended IV/2SLS, GMM and AC/HAC, LIML and k-class regression for panel data models", mimeo, http://ideas.repec.org/c/boc/bocode/s456501.htm, 15.12.2013.

Stock, J., Yogo, M. (2005). "Testing for Instruments in Linear IV Regression." In: Andrews DWK Identification and Inference for Econometric Models. New York, Cambridge University Press, pp. 80-108.

Stöllinger, R., Holzner, M. (2013). "State Aid and Export Competitiveness nst ñ

Figure 1: Total State Aid and Its Main Subcomponents as a Percentage of GDP (EU-27)*

Table 1: Descriptive Statistics

	Observation	Mean	Standard Deviation	Minimum	Maximum
Value Added Growth (per capita)	525	0.0213	0.0387	-0.1775	0.1181
Investment/GDP	532	█████	0.1896	-2.2443	-0.8925
Population Growth	540	-2.7818	0.1584	-4.6402	-2.4422
Total State Aid	428	-4.8612	0.6726	-6.9730	-3.0727
State Aid to Ind.	428	-5.2883	0.8080	-7.6009	-3.0791
Horizontal State Aid	428	-5.8212	1.9956	-44.5437	-4.1387
Sectorial State Aid	428	-5.9145	3.1537	-41.5794	-3.1156
Lagged Total State Aid	401	-4.8479	0.6728	-6.9730	-3.0727
Lagged State Aid to Ind.	401	-5.2803	0.8114	-7.6009	-3.0791
Lagged Horizontal State Aid	401	-5.8403	2.0533	-44.5437	

Table 2: The State Aid Expenditures of Member Countries as a Percentage of GDP

	total state aid	state aid to industry and services	horizontal state aid	sectorial state aid
Austria	0.75	0.44	0.41	0.35
Belgium				

Table 4: The Effects of Total State Aid, State Aid to Industry and Services, Horizontal State Aid and Sectorial State Aid on Economic Growth: Fixed Effects Model

Dependent Variable: Output Growth (per capita)	(1) Total State Aid	(2) State Aid to Ind. and Services	(3) Horizontal State Aid	(4) Sectorial State Aid	(5) Total State Aid	(6) State Aid to Ind. and Services	(7) Horizontal State Aid	(8) Sectorial State Aid
Gross Fixed Cap. Formation	0.0559***							

Note: ***, **, * indicates p 0.01, p 0.05, p 0.10 respectively. Standard errors are in parenthesis. All regressions include individual and time effects and are estimated by using robust standard errors.

Table 5: The Effects of Total State Aid and State Aid to Industry and Services on Economic Growth (Instrumental Variable Estimations)

	Total State Aid			State Aid to Industry and Services		
Dependent Variable: Output Growth (per capita)	(1) 1st stage, 2sls	(2) 2nd stage, 2sls	(3) 2nd stage, liml	(4) 1st stage, 2sls	(5) 2nd stage, 2sls	(6) 2nd stage, liml
Gross Fixed Cap. Formation	-0.2682	0.0556***	0.0555***	-0.9732***	0.0454***	0.0449***
	(0.2683)	(0.0155)	(0.0155)	(0.3202)	(0.0168)	(0.0170)
g+n+	-0.2667*	-0.0460***	-0.0462***	-0.1583	-0.0439***	-0.0440***
	(0.1485)	(0.0110)	(0.0111)	(0.1863)	(0.0114)	(0.0114)
EU Enlargement	-0.4529**	0.0117	0.0112	-0.4356*	0.0139**	0.0138**
	(0.1908)	(0.0077)	(0.0081)	(0.2349)	(0.0063)	(0.0065)
Crisis	-0.1373	-0.0194***	-0.0196***	-0.1472	-0.0190***	-0.0191***

Table 7: The Effects of State Aid and Its Subcomponents on Investment (Institutional Variable: Economic Freedom)

Dependent Variable: Gross Fixed Cap. For.	(1) Total State	(2) State Aid to Ind.	(3) Hor. State Aid	(4) Sec. State Aid	(5) Total State	(6) State Aid to Ind.	(7) Hor. State Aid	(8) Sec. State Aid
Total State Aid/GDP	-0.0187 (0.0215)							
State Aid to Ind. and Services/GDP		-0.0439** (0.0207)						
Horizontal State Aid/GDP			-0.0200 (0.0144)					
Sectorial State Aid/GDP				0.0011 (0.0049)				
Economic Freedom	0.6648** (0.2924)	0.6407** (0.2675)	0.7023** (0.2833)	0.6740** (0.2855)				
Total State Aid· Ec. Freedom	0.0876 (0.1936)							
State Aid to Ind.· Ec. Freedom		0.0523 (0.1333)						
Horizontal State Aid· Ec.Freedom			-0.2620 (0.1918)					
Sectorial State Aid· Ec.Freedom				0.0011 (0.0383)				
Lagged Total State Aid/GDP					-0.0256 (0.0246)			
Lagged State Aid to Ind. and								

21