LET THEM EXPORT CAKE: AN EXAMINATION OF THE ROLE OF ECONOMIC FREEDOMS IN FOSTERING INTRA-EMU EXPORT GROWTH

Paul Jeffries

Abstract

This paper investigates the relationship between various types of economic freedom and intra-EMU export growth. Export growth is the primary empirical puzzle that this paper seeks to explicate, and is important because the EMU’s inception preceded significant current account differentials that can mainly be attributed to changes in exports, as imports remained relatively constant. The independent variables—all types of economic freedom—were chosen in light of Cerny’s theory of the “competition state,” which highlights the importance of intra-state competition, theorizing that increased economic freedom renders a state more competitive thereby increasing exports (Cerny 2010). Employing standard econometric analysis and using export growth data from Aristotelous’ (2006) gravity model along with ten pre-coded variables for types of economic freedom, I find a positive and statistically significant** correlation between Investment Freedom and bilateral intra-EMU export growth. These results suggest that the determinants of bilateral export growth intra-EMU remain multitudinous, while Investment Freedom is one of the most influential among them.

Introduction

At present, the Greek financial crisis is one of the most polemic subjects in the news. With bailout packages for Greece still being negotiated at the time of this writing, many wonder what the future holds for Greece, particularly

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with regards to its role in the Eurozone; talk of the infamous “Grexit” abounds (Lilico 2015). Much more than just a national issue, the crisis in Greece has become a case study for the larger discussion of the European economic system. Many point to Greece as a situation that may adumbrate the future for the various economies in Europe (De Grauwe 2010).

To offer a comprehensive explanation of the current state of the European economic system and the recent crisis in Greece would be a Herculean task. Instead, this paper focuses on a small component of the European international political economy—the bilateral trade between nations within the European Monetary Union (EMU), predominantly exports. In an increasingly globalized world, trade is seen as increasingly important to a nation’s economic health (Hirst et al. 1992); hence, the normative implications of this research stem in part from the belief that we can learn more about the wellbeing of EMU nations through the lens of trade analysis.

The specific choice of exports as the focal point of this paper stems from the intriguing quandary they propose. While research has unambiguously shown a positive impact of the EMU on intra-EMU imports, the EMU’s effect on exports amongst its adherents has been widely divergent, making exports the driving force behind the ever-widening differentials between the current account balances of EMU nations (Belke et al. 2008). Moreover, the adherent nation most in distress as of late—Greece—also struggles the most when it comes to export growth. As it was put in a recent podcast by NPR’s Planet Money: “you like Greek yogurt? [It’s] probably not made in Greece [anymore]” (NPR 2015). This all begs the question of what has caused these disparities; how can we understand the curious trends in intra-EMU export growth?

To understand export growth trends within the EMU, I will review the topical scholarly literature on effective currency areas and European monetary integration, while drawing on those within the epistemic community. A broad consensus exists in the literature that the overall effect of EMU on the bilateral intra-EMU trade growth of its adherent nations is positive and significant. Furthermore, the literature demonstrates that this positive effect is not universal. Some members experience little trade growth, or even negative growth; hence, I endeavor to better understand the potential causal mechanisms that govern this disparity. What variable(s) best explain the differentiated EMU effects on bilateral country-specific trade growth between the adherent nations of EMU?
Section I: Literature Review

The EMU is, by all accounts, a relatively new entity, but with a nonetheless, rich, complex, and sometimes turbulent history. The EMU is fundamentally a currency union; therefore, it is appropriate to begin this literature review by delving into the scholarly work on currency unions.

Study of currency unions’ effects on trade—particularly motivated by the onset of EMU—is far from a nascent field; however, some general trends still characterize the majority of pertinent scholarly writings. Normally, analyses operate at the macro-level, with such scholars (Rose 2000; 2001; Frankel and Rose 2002; Glick and Rose 2002) “focus[ing] almost exclusively on the overall impact currency unions have on trade while paying very little attention to whether there are significant differences across the individual countries involved” (Aristotelous 2006). These scholars and others who have confirmed their modeling (Barr et al. 2003; De Nardis and Vicarelli 2003; Micco et al. 2003) have all demonstrated that “the effect of EMU on bilateral trade between the 12 countries that adopted the Euro as their national currency was positive and statistically significant” (Aristotelous 2006). It is worth noting, however, that while the literature has consistently upheld the EMU’s positive effect on trade at the macroscopic level, this positive effect has seen a downwards revisionary trend over time (Aristotelous 2006). Nonetheless, the most recent comprehensive study still shows that half of the econometric calculations “imply that currency union at least triples trade; 90% of [Rose’s] estimates imply a trade expansion effect of more than 25%; and almost all are statistically significant” (Rose 2002). In the scholarly literature, this general positive effect of currency unions—specifically the EMU—on trade flows has become known as the “Rose effect” (De Grauwe 2002).

Some scholars have challenged the validity of the “Rose effect” for its econometric soundness (Persson 2001; Nitsch 2001; and Baldwin 2006). However, most scholars—particularly those dedicated to European monetary integration—such as Bun and Klaasen (2002), Micco et al. (2003), De Nardis and Vicarelli (2003), Flam and Nordstrom (2003), and Berger and Nitsch (2006), believe that the “Rose effect” is at the very least positive and sizeable (De Grauwe 2002). That said, 10% of EMU adherents did not see a large trade expansion effect. One must nonetheless wonder: which member-states were these, and why did they differ?

Viewed concomitantly, Rose’s econometric study of the overall currency union effect on trade and the more specific studies of the generally positive trade effects spurred by EMU from scholars such as De Nardis and
Vicarelli beg the question: if the positive effects of EMU are not universal, what differentiates the trade winners from the trade losers? To answer this question, the level of analysis must be refined from the more macroscopic level of analyzing the EMU as a whole to the country-specific level.

At the writing of this paper, the two studies most often referenced that examine the EMU effects on trade at the state-specific level—exploring the trade effects of EMU on each individual signatory—are Micco et al. (2003) and Aristotelous (2008). Nonetheless, Micco, Stein, and Ordoñez’s paper still adopts a more macroscopic focus than Aristotelous’, as it focuses on the effect of EMU on trade relationships outside of the union, finding “no evidence of trade diversion. On the contrary, some of [their] results suggest that the euro leads to higher trade not just with other euroland members, but also with the rest of the world” (Micco et al. 2003) While an important contribution to the literature, Ordoñez et al. sacrifice some degree of precision as a result of their widened scope; hence, while the substantive results of Micco et al. confirm those of Aristotelous, one must turn to Aristotelous to see the most specific and extensive research on country-specific trade effects within EMU.

Aristotelous’ 2006 paper picks up where Rose left off and where Ordonez et al. began to investigate, endeavoring to understand the effects of EMU on the trade of each adherent. As they are of great importance to this paper, Aristotelous’ empirical analysis and specific gravity model will be expounded on later, as one of the variables for this paper’s empirical analysis derives from the findings of Aristotelous’ model. Aristotelous’ main conclusion in this paper (2006) was gleaned from his use of fixed-effects analysis of pooled data. He found that the impact of EMU on trade is positive and statistically significant for Belgium/Luxembourg, Finland, Germany, Ireland, the Netherlands, Portugal and Spain. For Italy, the effect is positive but not statistically significant. For Austria, France and Greece, the effect of EMU on their trade to the euro area is negative and statistically significant (Aristotelous 2006). As one can see, the previous quandary pertaining to the 10% of nations in Rose’s most recent study that did not exhibit a positive trade effect because of EMU is now clarified thanks to Aristotelous’ modeling; instead, the gap in the literature to explore has now become a question of what differentiates Austria, France, and Greece—whose bilateral intra-EMU exports were negatively affected by EMU—from all of the other EMU adherent nations, who experienced positive effects.

Aristotelous, along with other scholars, can provide us with a variety of theories that might explain this differentiation in EMU effects on exports. As Aristotelous writes, “[F]rom a theoretical perspective, the differentiated effect of EMU on trade may arise because EMU countries differ in terms of trade
composition, different level of economic development, different level of integration, or even different degree of trade openness” (Aristotelous 2006). Each of these potential explanations has its merits, but some more so than others.

Trade competition and level of development, while perhaps theoretically promising as intervening variables in the creation of this disparity in EMU trade effects, are not supported by the substantive contributions in the literature. Aristotelous defuses the argument for trade competition as a possible explanatory variable by citing case studies: “Differences in trade composition or level of development cannot be sources for the differentiated EMU effect on trade. EMU had a positive and significant effect on the trade of Portugal and a negative and significant effect on the trade of Greece, two countries with similar trade composition, level of development, and even population” (Aristotelous 2006). This refutation is supported by other scholars, including Vicarelli et al. (2008), who found that even states such as France and Germany that share a dominant sector were affected by the EMU in vastly different ways. Aristotelous defuses the argument for different levels of integration as being a potential explanatory variable again via the case study, stating: “the level of integration could be an explanation for the effect of EMU on Greece’s trade since Greece is isolated geographically from the rest of the EU, but this explanation could not be valid for France, a country that is one of the founding members of the EU and is at its geographical [center]” (Aristotelous 2006). Further scholarly work supports Aristotelous’ conclusions, highlighting EMU as one of the best case studies to date concerning integration (Ludema et al. 1999).

From here, it seems that of Aristotelous’ proposed explanations, all that remains promising is the hypothesis that trade openness can explain the bilateral trade growth differentials. Aristotelous hints that the impact of trade openness has yet to be explored, but shows signs of veridicality: “The most likely source of the EMU differential effect on trade is a country’s degree of trade openness. Countries with a higher degree of trade openness (such as Germany) are likely to reap greater benefits from the lower transaction costs, reduced exchange rate uncertainty, and enhanced competition through greater price transparency resulting from the introduction of a common currency” (Aristotelous 2006). While logically and theoretically promising, this assertion has yet to be empirically tested in a substantive manner. This is part of the purpose of this paper.

In a more recent paper, Aristotelous explores Greek exports, demonstrating that “the effect of the EMU on Greece’s exports to Eurozone is
negative and statistically significant,” an astonishing discovery given that one of the primordial purposes for EMU was to increase intra-EMU trade (Aristotelous 2008). Perhaps even more important, however, is Aristotelous’ conclusion that the empirical evidence “suggests that the negative EMU effect on Greece’s exports to Eurozone is in part due to a loss in Greece’s competitiveness in Eurozone markets” (Aristotelous 2008). This finding, suggests that trade competitiveness may be a variable of vital importance in determining the nature of the EMU’s effect on a constituent nation’s bilateral export growth. Trade competitiveness and the principles of neoclassical economic theory will be explored in greater depth in the forthcoming section on theory with an eye towards better understanding how competitiveness in Eurozone markets informs an EMU nation’s trade growth.

As can be seen, a substantive gap in the literature is present, offering a promising research avenue to explore. Aristotelous’ first paper, along with the work of Ordoñez et al., has elucidated the disparate trade effects of EMU on its constituent nations, with some suggestion that degree of national trade openness might be responsible for this disparity. It is Aristotelous’ concluding call for further research in this area to explore the possibility that trade openness might account for the varying ways in which EMU nations did and did not experience the ‘Rose effect’ that this research aims in part to answer. Aristotelous’ more recent case study highlights the peculiar case of Greece—a state that experienced a negative effect on export growth because of EMU and also saw its intra-EMU overall exports decrease as a result of joining the Euro, in part due to reduced competitiveness.

Given the widespread consensus in the literature that the EMU has had a macroscopically positive trade effect on its constituent nations but with great diversity in the magnitude of the ‘Rose effect’ experienced at the country-specific level, I aim to depart where Aristotelous left off, seeking to explore whether or not evidence exists to substantiate the claim that trade openness—along with other indicators of economic freedom and openness of varying types—might be influential variables in the causation of the EMU’s export effect disparity on its adherents.

Section II: Theory

Having established a clear explanation of where this research fits in the context of the aforementioned epistemic communities, the primary theories on the basis of which the forthcoming hypotheses will be posited now merit explanation. The first theory to be examined will elucidate the perspective I adopt when conceptualizing state economies within the EMU, which is one based predominantly on the ‘interstate competition’ hypothesis, which derives from one
of the basic premises of neoclassical economics.

The most cited work widely considered to be the seminal contribution to the field that deals with the role of inter-state economic competition in an increasingly globalized world is written by Allen Scott. Therein is his now widely accepted claim that globalization is leading not only to an increase in relationships of interconnectedness but also relationships of inter-state competition (Scott 1999). More specially, I find Philip Cerny’s argument pertaining to the modern transition from “raison d’État” to “raison du Monde” to be quite persuasive (Cerny 2010). In essence, Cerny elaborates on the competition-based relationships between states that Scott began to develop, believing that Foucault’s “Raison d’État is being superseded by a transnationalising, globalizing rationality that [Cerny] call[s] raison du Monde, at the core of which is the imperative of maintaining and promoting competitiveness in a world marketplace and multi-level political system—the Competition State” (Cerny 2010). I am persuaded by the arguments of Scott and Cerny, and find it useful to thus adapt the economic viewpoint of competition theory in contemplating state ambitions; it is widely acknowledged that states are increasingly interconnected, but they are nonetheless still competing against one another.

Adopting this mindset, one can begin to imagine that states, much like producers seeking to make a profit, will attempt to render themselves more competitive. In an increasingly globalized world, competition becomes even fiercer, as international trade is facilitated. As transport costs are reduced, geography can become less of a hindrance to trade; thus, the international market becomes increasingly competitive. The key takeaway from this competition theory approach offered by the likes of Scott and Cerny, and adopted in this paper, is the need to view states as engaged in competition, and increasingly so due to globalization. As such, the question surfaces: how did EMU affect the competitiveness of its adherents?

It merits reiterating that the main historical point of interest in this paper is the difference in national economic competitiveness within the European community prior to EMU as compared to after EMU.¹ Beginning with what many would argue is the first major step towards the establishment of EMU—the Maastricht Treaty—economic competition within EMU nations began to change rapidly, as the tools for national differentiation were increasingly limited by the goal of national policy coordination (Grieco 1995).

More specifically, many scholars have proven empirically what would seem

¹ As a reminder, this paper focuses only on developments intra-EMU nations; hence, the competitiveness of the states within EMU vis-à-vis states outside of EMU will not be broached here.
theoretically obvious: all that EMU entails—from the single market, to the universal elimination and restriction of intra-EMU barriers to trade, to the introduction of the common currency—have had positive general effects on intra-EMU trade (Berger et al. 2008). Phrased in the diction of Cerny’s ‘competition state’ theory, EMU has made intra-EMU trade more preferable. At the same time; however, EMU served a homogenizing purpose as well, by leveling the competitive economic playing field among EMU nations in many respects. As numerous scholars have illustrated by focusing on specific sectors—for example Pagano, Marco, and Von Thadden (2004) who studied homogenization’s effect on the bond markets of EMU’s adherents—EMU’s resulting policy assimilation amongst its adherents has eliminated many mechanisms that once differentiated the nations of EMU; where once national economic competitiveness was influenced by currency and trade barriers, homogenization has done away with such differences (Pagano et al. 2004).

It is here that the principles of neoclassical economics begin to visibly inform the formation of my forthcoming hypotheses. I find it convincing that by eliminating various mechanisms by which the ‘Competition State’ had previously been able to determine its own competiveness as regards international trade, EMU has had a moderating effect on the variables that determine a state’s competitiveness (Cerny 2010). By eliminating determinants of relative national economic competitiveness such as currency strength and various trade barriers, other determinants will see their relative importance exacerbated as a result of EMU.

Aristotelous’ suggestion that a link may exist between trade openness and intra-EMU bilateral export growth is convincing; however, there are other, more convincing potential explanatory variables. The reason why trade openness alone may not have the most powerful effect on state competitiveness and thus bilateral export growth is that some of the components of trade openness will be controlled by EMU’s regulatory bodies or its subsidiary treaties. In other words, some of the determinants of national trade openness will have been substantially homogenized by EMU (Grieco 1995). For example, trade openness is generally constituted of tariffs and non-tariff protectionist measures, such as administrative red tape, quality regulations, etc. As a result of this, a large portion of the policies that constitute trade openness will be homogenized by EMU regulatory bodies. This point can be further clarified drawing from the theoretical work on intrinsic vs. extrinsic incentives for reform by Karagiannis and Konstantinidis (2013).

Karagiannis and Konstantinidis (2013) focus on the issue of intrinsic and extrinsic incentives for reform. I propose that the same lens of analysis can be applied to the labeling of policies, as opposed to incentives. For example, let
us return to Aristotelous’ trade openness theory. As was discussed, trade openness can be stratified into tariff and non-tariff barriers to trade, the latter not being controlled by the EMU regulatory bodies, while the former is. Given this regulation, regardless of the intrinsic national motivations for tariffs prior to EMU, all adherent states after EMU will have to homogenize their policies, thereby all adopting a similar policy of no tariff barriers to trade intra-EMU—a policy decision that was extrinsically imposed and not necessarily intrinsically motivated. This homogenization will, however, not interfere with states’ policies on non-tariff barriers to trade, meaning that greater disparity will exist between the non-tariff protectionist policies of EMU nations, leading to greater differentiation and thus more obvious differences in competitiveness as competition states.

In conclusion, I argue that the scope of promising variables that might explain the disparity in intra-EMU bilateral trade growth must be expanded. Instead of simply trade openness—the effects of which would be in part limited due to the homogenization of the extrinsically regulated components thereof—I propose that all varieties of economic freedom be examined. Out of all of types of economic freedom—from Trade Freedom to Freedom from Corruption—I propose that the variables least affected by extrinsically imposed EMU regulations will correlate with bilateral intra-EMU export growth to a greater extent than those types of freedom that were more greatly affected by EMU regulations. For example, Monetary Freedom will most likely not have as much predictive statistical power in determining a nation’s intra-EMU export growth because EMU nations share a currency and thus will have largely homogenized and extrinsically regulated Monetary Freedom. Following the same logic, a variable such as Investment Freedom appears to be quite promising, as the EMU regulatory bodies govern investment to much a lesser extent than they do trade or currency; hence, one would expect greater variations in Investment Freedom amongst the EMU nations and thus a better chance that Investment Freedom will play a significant role in the determination of intra-EMU export growth.

Drawing from neoclassical economics and its many subsidiary theories such as that of the ‘Competition State,’ I see a potential explanation for the divergent outwards trade effects of EMU on its adherents begin to emerge: EMU has created a significantly homogenized international economic playing field in which national absolute and comparative trade advantages have less determinants, rendering the remaining determinants more influential. With this theoretical justification having been explained, the hypotheses to be tested are as follows:
Hypotheses

H₁ : As Market Openness increases, so too will weighted intra-EMU export growth.
H₂ : As Investment Freedom increases, so too will weighted intra-EMU export growth.
H₃ : As Trade Freedom increases, so too will weighted intra-EMU export growth.
H₄ : As Financial Freedom increases, so too will weighted intra-EMU export growth.
H₅ : As Overall Economic Freedom increases, so too will weighted intra-EMU export growth.
H₆ : As Monetary Freedom increases, so too will weighted intra-EMU export growth.
H₇ : As Business Freedom increases, so too will weighted intra-EMU export growth.
H₈ : As Fiscal Freedom increases, so too will weighted intra-EMU export growth.
H₉ : As Property Freedom increases, so too will weighted intra-EMU export growth.
H₁₀ : As Freedom from Corruption increases, so too will weighted intra-EMU export growth.

Each of these hypotheses serves to test the potential relationship between my outcome variable and one of my 10 independent variables. As I will expound, Market Openness is a variable that I codified myself for the purpose of this paper, aggregating the effects of Investment, Trade, and Financial Freedom inspired by the Heritage Foundation’s dataset overview. Finally, I expect the correlative strength of the relationships explored in hypotheses pertaining to variables with little extrinsically imposed EMU regulation to be higher than those that are regulated to a greater extent by EMU. Using the same example as previously referenced, I predict that H₂ will be one of the most robust out of all of the hypotheses, given the minimal regulatory power exerted by EMU over the investment policies and regulations of each nation.

Section III: Methods
With this theoretical framework having been clearly explained, an in-depth characterization of the different variables to be used in this paper is now needed. For reference, the majority of the terms used to describe variable coding and operationalization are drawn from Chaudoin, Milner, and Pang (2015).

The outcome variable in this paper is the average growth in intra-EMU bilateral exports over the temporal range from 1996-2003. It may also be termed our dependent variable. The current method that allows for the synthesis of such a variable is the gravity model, which is known for having provided “some of the clearest and most robust empirical findings in economics” (Aristotelous 2006). The much aforementioned Professor Aristotelous has given me consent to use the gravity model from his 2006 paper—which will be discussed shortly—as well as the empirical results from said model for the purposes of this project; hence, a new gravity model need not be constructed. Notwithstanding, it is obvious that the same unit and temporal boundaries adopted in Aristotelous’ paper must therefore be adhered to in this paper’s analysis as well for the purpose of coherence.

A final note on the temporality of this paper’s data: the beginning of the sample period I consider, just as with Aristotelous’ paper, matches up perfectly with the sample period from Micco et al.’s 2003 paper, and, as stated by Aristotelous and Micco et al., “the shorter the time period used, the lower the endogeneity bias in the EMU coefficient due to the optimal currency criteria. Thus, the beginning of the sample was set to 1992 to limit the endogeneity bias” (Aristotelous 2006).² In short, the relatively restrictive temporal limits of this research need not be sheerly a negative point.

Now, an elucidation of the source of my pre-coded independent variables is appropriate. The theories previously explored suggest that different types of economic freedom would be promising potential causal mechanisms behind the differential bilateral trade growth effects experienced by the EMU nations; however, finding a variable that quantifies a concept such as “trade openness” or other types of economic freedom proves quite difficult. I searched through a variety of reputable data sources, including the WTO, IMF, World Bank, Peterson Institute, ICC Open Markets Index, and the Heritage Foundation. Of all of these sources, the only database that had adequate codebook information, pre-coded variables, and a data set that spanned the

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² It merits clarifying that the temporal range of Aristotelous’ data (1992-2003) does not match perfectly with the Heritage data set’s temporal range (1996-present); hence, for the purpose of statistical reliability, the more constrained temporal range was chosen for the empirical analysis in this paper: 1996-2003.
timeframe necessary was the Heritage Foundation’s Index of Economic Freedom (O’Driscoll et al. 2001). This database, which provides yearly national scores for overall economic freedom, as well as 10 other disaggregated scores that rank various components of economic freedom and are used to formulate the overall score, includes a detailed description of the codebook behind the codification of each score.

Having now elucidated the general nature of the variables to be examined in this paper, an exposition of their codification is needed. A final clarification needs to be made, however, with respect to state capacity and enforcement. The enforcement capacity of the EU is widely criticized, but not with respect to their oversight of the common market and the elimination of tariff barriers to trade (Crowley 2005). For this reason, it is safe to assume that all EMU nations are complying with the regulations that maintain the common market—such as the mandate to allow no intra-EMU tariffs, for example—as this area of oversight is one in which the EU has historically excelled, even if in other areas they have been less successful (ibid).

Having justified these presumptions of scope and capacity, the presentation of my variable codebook is now appropriate (See next page).

3 Some of the independent variables in the study are inextricably influenced by state capacity. For example, freedom from corruptions is one of the independent variables obviously influenced by state capacity. A state with a high amount of corruption may very well aim to reduce said corruption, but lack the capacity to do so due to a variety of events out of its control (Besley et al. 2007). While at first this may seem troublesome, it is a non-issue for the specific purpose of this research, as my focus is only to examine whether or not a relationship exists between certain types of economic freedom/openness and increased outward bilateral trade intra-EMU; I do not purport to offer an explanation for the trends of each type of freedom a nation-specific level. This again is an issue of method and methodology, as the purpose of the type of statistical and econometric research in this paper is to seek out a statistically supported covering law not falsifiable given the chosen data and tests and the resulting empirics. A more in-depth exploration of the state-specific reasons for trends in national econometric freedom of varying types would be better suited for a case study analysis, but such depth is neither the aim nor within the purview of this paper.
Each of the above variables, with the exception of ARISTOT, were taken from the Heritage Foundation’s Index of Economic Freedom. The codebook for each of the variables is freely available online at their website, and should be referenced for any and all questions about the codification of specific variables (http://www.heritage.org/index/about). The one exception is Market Freedom, which is a variable I synthesized from the aggregate of Trade, Investment, and Finance Freedom, inspired by the research accompanying the Heritage codebook.

It should be remembered that year-by-year data were available for the Heritage database, but the coefficients from Aristotelous’ data set pertained only to the total effect experienced over the course of the temporal range from his paper. As a result of this, each of the standardized variables synthesized using raw data from the Heritage database were synthesized taking the mean of the temporal range (1996-2003) for the sake of statistical consistency and reliability. These temporal limitations are what preclude me from being able to empirically prove that EMU had a moderating effect on the impact of the various types of economic freedom on outward intra-EMU trade; although the argument that EMU did serve a moderating effect is strong enough regardless given the theory and scholarly support previously expounded.
While all information pertaining to the variables from the Heritage database is available online, the formula behind the variables from Aristotelous’ paper merits brief explanation. Aristotelous’ country-specific bilateral trade growth coefficients come from the following econometric model:

$$\ln (X_{ijt}) = \beta_0 + \beta_1 \ln (D_{ij}) + \beta_2 \ln (Y_{ij}) + \beta_3 \ln (Y_t) + \beta_4 \ln (\text{Pop}_t) + \gamma_1 \ln \left(\frac{Y_t}{\text{Pop}_t}\right) + \gamma_2 \ln (\text{AREA}_t) + \gamma_3 \ln (\text{ARISTOT}) + \gamma_4 \ln (\text{ARISTOT})_t + \gamma_5 \ln (\text{ARISTOT})_t + \gamma_6 \ln (\text{ARISTOT})_t + \gamma_7 \ln (\text{ARISTOT})_t + \gamma_8 \ln (\text{ARISTOT})_t + \gamma_9 \ln (\text{ARISTOT})_t + \gamma_{10} \ln (\text{ARISTOT})_t + \gamma_{11} \ln (\text{ARISTOT})_t + \gamma_{12} \ln (\text{ARISTOT})_t + \epsilon_{ijt}$$

“Given the specification of the equation, the coefficients of interest in this study are all the ‘γs’. Each γ captures respectively the effect of EMU on ... [a nation’s] trade with other EMU countries.” (Aristotelous 2006) For the purpose of this paper, it is the country-specific γ variables that are borrowed and then standardized that serve as my dependent outcome variable. As an example, γ₁ once standardized becomes Austria’s ARISTOT variable value. For further information on the dummy variables included in Aristotelous’ gravity model, see Aristotelous’ 2006 paper—particularly his section on Model Specification. Having established these variable labels, the 10 hypotheses can now be conceptualized as tests of relationships between said specific variables as follows:

- **H₁**: As a nation’s Market Openness increases, so too will its weighted intra-EMU export growth.
  - As MARKET increases, so too will ARISTOT.
- **H₂**: As a nation’s Investment Freedom increases, so too will its weighted intra-EMU export growth.
  - As INVEST increases, so too will ARISTOT.
- **H₃**: As a nation’s Trade Freedom increases, so too will its weighted intra-EMU export growth.
  - As TRADE increases, so too will ARISTOT.
- **H₄**: As a nation’s Financial Freedom increases, so too will its weighted intra-EMU export growth.
  - As FINANCE increases, so too will ARISTOT.
- **H₅**: As a nation’s Overall Economic Freedom increases, so too will its weighted intra-EMU export growth.
  - As OVERALL increases, so too will ARISTOT.
- **H₆**: As a nation’s Monetary Freedom increases, so too will its weighted intra-EMU export growth.
  - As MONEY increases, so too will ARISTOT.
H₇: As a nation’s Business Freedom increases, so too will its weighted intra-EMU export growth.

As BUSINESS increases, so too will ARISTOT.

H₈: As a nation’s Fiscal Freedom increases, so too will its weighted intra-EMU export growth.

As FISCAL increases, so too will ARISTOT.

H₉: As a nation’s Property Freedom increases, so too will its weighted intra-EMU export growth.

As PROPERTY increases, so too will ARISTOT.

H₁₀: As a nation’s Freedom from Corruption increases, so too will its weighted intra-EMU export growth.

As NOCORRUP increases, so too will ARISTOT.

The empirical analysis to be employed will consist first of ten bivariate regressions—one for each of the above hypotheses—with the resulting R² and Pearson Coefficient values being recorded. Subsequently, standard statistical tests will be applied so as to derive a p-value from the Pearson Coefficients, resulting in a p-value for each of the hypotheses. Using these p-values, I will seek to establish whether or not I can reject the null hypotheses in each of the 10 cases. As would be assumed given the model, standard one-tailed probability will be used.

Section V: Empirical Analysis

The first stage of my empirical analysis involved the normalization of my data, as otherwise it would be statistically impossible to compare the dependent and independent variables. Using standard statistical methods, the outcome variable was achieved by normalizing the bilateral trade coefficients from Aristotelous’ 2006 paper, thereby yielding my ARISTOT variable, shown on the next page.
As there are 10 independent variables, the normalization process for only one exemplar will be shown. Similar techniques were used for the normalization of the dependent and independent variables. This process was repeated for all independent variables, and the first step of converting the mean overall scores to a standardized form is shown in Table 3.

**Table 3. Nations sorted by overall economic freedom including mean of their overall scores from the Heritage index synthesized using yearly pooled data from 1996-2003 as well as OVERALL—the variable representing the standardized form of the mean overall scores.**

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<td>France</td>
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<tr>
<td>Greece</td>
<td>60.500</td>
<td>-1.283134384</td>
</tr>
<tr>
<td>Spain</td>
<td>64.813</td>
<td>-0.423892609</td>
</tr>
<tr>
<td>Portugal</td>
<td>65.063</td>
<td>-0.374081492</td>
</tr>
<tr>
<td>Austria</td>
<td>66.875</td>
<td>-0.012950891</td>
</tr>
<tr>
<td>Finland</td>
<td>67.200</td>
<td>0.051803562</td>
</tr>
<tr>
<td>Germany</td>
<td>67.725</td>
<td>0.156406909</td>
</tr>
<tr>
<td>Belgium</td>
<td>70.465</td>
<td>0.701838644</td>
</tr>
<tr>
<td>Netherlands</td>
<td>71.575</td>
<td>0.923498116</td>
</tr>
<tr>
<td>Ireland</td>
<td>76.013</td>
<td>1.807645450</td>
</tr>
</tbody>
</table>

Having normalized both sets of variables (independent and dependent), I can move on to regress OVERALL against ARISTOT using the standard statistical functions. The combined table used for the ARISTOT vs. OVERALL regression
construction is thus structured as follows:

Table 4. Nations sorted by standardized bilateral export growth—ARISTOT—with corresponding standardized overall freedom—OVERALL.

<table>
<thead>
<tr>
<th>Nation</th>
<th>Standardized bilateral export growth (ARISTOT)</th>
<th>Standardized overall freedom (OVERALL)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Greece</td>
<td>-1.49769851</td>
<td>-1.28313438</td>
</tr>
<tr>
<td>France</td>
<td>-1.19266826</td>
<td>-1.54713331</td>
</tr>
<tr>
<td>Austria</td>
<td>-0.88763802</td>
<td>-0.01295089</td>
</tr>
<tr>
<td>Finland</td>
<td>-0.24707450</td>
<td>0.05180356</td>
</tr>
<tr>
<td>Netherlands</td>
<td>-0.04880484</td>
<td>0.92349812</td>
</tr>
<tr>
<td>Belgium</td>
<td>0.10371028</td>
<td>0.70183864</td>
</tr>
<tr>
<td>Ireland</td>
<td>0.33248297</td>
<td>1.80764545</td>
</tr>
<tr>
<td>Portugal</td>
<td>0.71377078</td>
<td>-0.37408149</td>
</tr>
<tr>
<td>Germany</td>
<td>1.09505859</td>
<td>0.15640691</td>
</tr>
<tr>
<td>Spain</td>
<td>1.62886152</td>
<td>-0.42389261</td>
</tr>
</tbody>
</table>

Having seen an example of the method by which the regressions were constructed, Table 5 below includes the results from all 10 regressions.

Table 5. Summary of R2 results from all empirical analyses conducted sorted from highest to lowest values for R2.

<table>
<thead>
<tr>
<th>Regression Test Ran</th>
<th>R²</th>
</tr>
</thead>
<tbody>
<tr>
<td>ARISTOT vs. MARKET</td>
<td>0.3236</td>
</tr>
<tr>
<td>ARISTOT vs. INVEST</td>
<td>0.3143</td>
</tr>
<tr>
<td>ARISTOT vs. OVERALL</td>
<td>0.1607</td>
</tr>
<tr>
<td>ARISTOT vs. TRADE</td>
<td>0.1147</td>
</tr>
<tr>
<td>ARISTOT vs. MONETARY</td>
<td>0.0720</td>
</tr>
<tr>
<td>ARISTOT vs. FINANCE</td>
<td>0.0582</td>
</tr>
<tr>
<td>ARISTOT vs. FISCAL</td>
<td>0.0332</td>
</tr>
<tr>
<td>ARISTOT vs. PROPERTY</td>
<td>0.0210</td>
</tr>
<tr>
<td>ARISTOT vs. BUSINESS</td>
<td>0.0157</td>
</tr>
<tr>
<td>ARISTOT vs. NOCORRUP</td>
<td>0.0062</td>
</tr>
</tbody>
</table>

At this point, the empirics do not yet allow for the support or rejection of the various hypotheses. For this, p-values must be obtained for each variable relationship. Using standard statistical methods, the following data were obtained.
Given the p-values and corresponding significance levels discovered by the empirical analysis, I can now summarize the findings by identifying which null hypotheses I can and cannot reject, subsequently rejecting all hypothesizes that cannot be supported in a statistically significant manner. See a summary of the findings in Table 7.

Table 7. Null hypotheses listed with corresponding summary of findings—either reject or failure to reject—along with brief justifications

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>Null Hypotheses</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>$H_0$ : Market Openness does not correlate positively with intra-EMU bilateral trade growth.</td>
<td><em>Reject $H_0$, support the probability of a positive relationship between Market Openness and intra-EMU trade growth.</em></td>
</tr>
<tr>
<td>2</td>
<td>$H_0$ : Investment freedom does not correlate positively with intra-EMU bilateral trade growth.</td>
<td><em>Reject $H_0$, support the probability of a positive relationship between Investment Freedom and intra-EMU trade growth.</em></td>
</tr>
<tr>
<td>3</td>
<td>$H_0$ : Trade Freedom does not correlate positively with intra-EMU bilateral trade growth.</td>
<td><em>Fail to reject $H_0$, thus cannot support $H_A$ (cannot support original hypothesis)</em></td>
</tr>
<tr>
<td>4</td>
<td>$H_0$ : Financial Freedom does not correlate positively with intra-EMU bilateral trade growth.</td>
<td>“…”</td>
</tr>
<tr>
<td>5</td>
<td>$H_0$ : Overall Economic Freedom does not correlate positively with intra-EMU bilateral trade growth.</td>
<td>“…”</td>
</tr>
<tr>
<td>6</td>
<td>$H_0$ : Monetary Freedom does not correlate positively with intra-EMU bilateral trade growth.</td>
<td>“…”</td>
</tr>
<tr>
<td>7</td>
<td>$H_0$ : Business Freedom does not correlate positively with intra-EMU bilateral trade growth.</td>
<td>“…”</td>
</tr>
<tr>
<td>8</td>
<td>$H_0$ : Fiscal Freedom does not correlate positively with intra-EMU bilateral trade growth.</td>
<td>“…”</td>
</tr>
<tr>
<td>9</td>
<td>$H_0$ : Property Freedom does not correlate positively with intra-EMU bilateral trade growth.</td>
<td>“…”</td>
</tr>
<tr>
<td>10</td>
<td>$H_0$ : Freedom from Corruption does not correlate positively with intra-EMU bilateral trade growth.</td>
<td>“…”</td>
</tr>
</tbody>
</table>
Discussion of Empirical Findings

As can be seen, of my 10 originally proposed hypotheses, only two of them hold true at a statistically significant level**; hence, all others can be rejected. Granted, the data were limited by their restricted temporality (1996-2003) and by the dearth of year-by-year intra-EMU bilateral trade growth data; therefore, if more substantial data become available, a richer analysis can be conducted. The data indicate that Market Openness would be the variable with the highest degree of predictive power when it comes to predicting intra-EMU bilateral export growth, as \( H_1 \) is empirically supported at a statistically significant level** to a slightly greater degree than \( H_2 \), which is also supported at a statistically significant level**. That said, in order to fully expound the meaning of the empirical findings, a series of robustness checks need to be executed.

Robustness Checks

Prior to concluding that Market Openness (MARKET) truly was the variable with the greatest predictive statistical power, a collinearity test needs to be ran, particularly given the fact that Investment Freedom (INVEST) constituted 1/3 of the aggregate index from which my MARKET variable was synthesized. The purpose of this is to determine the veritable robustness of my statistical results, with an eye towards looking past the simple p-values and determining what the data actually means. “Data weaknesses (such as collinearity) reduce the quality of least-squares estimates by inflating parameter variances;” hence, a discovery of collinearity between the two variables for which the null was rejected would call into question whether both tests can be deemed statistically significant (Belsley 1982). The results from the collinearity tests are as follows.
As can be seen, there is a recognizable collinearity problem with the two variables for which the null was rejected: Market Openness and Investment Freedom. This collinearity is visible both graphically, and in the $R^2$ value: 0.67684, which suggests significant collinearity. While co-linearity is emblematic of data weaknesses, it does not disqualify the reliability of all results, but instead calls for further examination of the results. An explanation for the collinearity and its implications can be found by breaking down the MARKET aggregate variable into its three component variables, as can be seen in Table 8.

Table 8. MARKET aggregate variable and its three component variables—INVEST, TRADE, and FINANCE—sorted from highest to lowest R2 value, displayed with corresponding p-values and significance levels.

<table>
<thead>
<tr>
<th>Variable</th>
<th>$R^2$</th>
<th>P-value</th>
<th>Significant Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>MARKET (Aggregate)</td>
<td>0.3236</td>
<td>0.04307397</td>
<td>**</td>
</tr>
<tr>
<td>INVEST (Component)</td>
<td>0.3143</td>
<td>0.04591079</td>
<td>**</td>
</tr>
<tr>
<td>TRADE (Component)</td>
<td>0.1147</td>
<td>0.16922193</td>
<td>N/A</td>
</tr>
<tr>
<td>FINANCE (Component)</td>
<td>0.0582</td>
<td>0.25097057</td>
<td>N/A</td>
</tr>
</tbody>
</table>

* = 0.1 CL; ** = 0.05 CL; and *** = 0.01 CL

Upon a detailed examination of the above data, it becomes apparent that the reason for the collinearity between INVEST and MARKET was because...
the statistical strength of MARKET was upheld almost entirely by INVEST; differently put, Investment, Trade, and Financial Freedom were not equally important in determining the statistical strength of the correlation between Market Openness and growth in intra EMU outwards trade—it was the disproportionate correlative strength of Investment Freedom that rendered the MARKET aggregate variable statistically significant as well. Thus, my data actually suggest that the one hypothesis most promising in terms of its potential to serve as a general covering law as per the methodological motivations of this research is H₂, as H₁—while statistically significant—derived its correlative strength only from one of its composite variables—Investment Freedom—the power of which is already more precisely captured by H₂. As a result of this, the statistical tests pertaining to Invest Freedom merit additional focus. The regression information for Investment Freedom is shown graphically in Figure 2.

![Figure 2. Regression of Standardized Investment Freedom (INVEST) on the x-axis against Standardized Intra-EMU Export Growth (ARISTOT) on the y-axis. R² value of 0.31532 suggests presence of moderate positive correlation.](image)

Upon a more detailed examination of the regression it becomes clear that visually there appears to be an outlier in the lower-left quadrant. This data point represents France, which stood out amongst all other nations for which data was gathered as having surprisingly low Investment Freedom as compared to the rest of the EMU adherents. This can perhaps be even better illustrated in table form, as in Table 9.
As can be seen from Table 9, France is a clear outlier with substantially lower Investment Freedom than all other nations considered. In fact, every EMU nation lies within less than one standard deviation from the mean Investment Freedom score of 70.375, with the exception of France, the score of which lies more than two standard deviations below the mean. Out of all variable relationships tested in this experiment over the course of the 10 separate regressions ran, France’s score for Investment Freedom was by far the most outstanding outlier.

The other intriguing yet not unexpected trend in the data pertains directly to the current Greek financial crisis that in no small part inspired this paper. The nation that most consistently and holistically placed in the same strata of the various indices of econometric freedom was Greece, which ranked lowest in Freedom from Corruption, Property Rights, Monetary Freedom, and Financial Freedom. In the case of each of these four variables, Greece scored 1.5 standard deviations below the mean or worse, once their scores were standardized. This suggests that further investigation into the specific case of Greece with a particular focus on government restrictions on various elements of economic freedom could prove fruitful.

Section VI: Conclusion

This article investigates some of the potential variables that may serve as causal mechanisms behind the intriguing trends in divergent bilateral intra-EMU export growth post-EMU. The outcome variable of interest—bilateral intra-EMU export growth—was drawn from the previous empirical studies of Aristotelous (2006) who utilized an augmented gravity model to identify the disparate effect.
of EMU on the outwards intra-EMU trade growth of its adherents. In his conclusion, he theorized that the most promising variable that might explain these disparities was trade freedom, arguing that the countries with the highest degree of trade freedom would reap the greatest benefits of the optimal currency area (ibid).

The empirical analysis of this research does not support Aristotelous’ claim that trade freedom is the best predictor of bilateral intra-EMU export growth. H3—the hypothesis that emulates Aristotelous’ claim—could not be supported by the empirical analysis of this paper. To recapitulate the main empirical findings, the only hypotheses which were not falsified by my empirical analysis were H1 and H2—pertaining to Market Freedom and Investment Freedom respectively—both being supported as presenting a statistically significant relationship at the 5% confidence level. Upon further analysis of the regressions, it was discovered that a problematic collinear relationship exists between H₁ and H₂, which can be attributed to the fact that Investment Freedom (H₂) was part of the aggregate variable composition of Market Freedom (H₁). As such, the importance of the statistical correlative power of Market Freedom is greatly reduced.

From here, we can return to the theoretical backbone of this paper, using it to better understand the implications of the empirical findings. In an increasingly globalized world, there is both more inter-state cooperation as well as more inter-state competition (Cerny 2010). This paper examines the potential link between various types of economic freedom and bilateral intra-EMU export growth motivated by the theoretically supported presumption that these variables partially constitute state competitiveness. The imperfect R² values and confidence levels yielded by this empirical analysis, along with the fact that 8/10 hypotheses were rejected and only 1/10 can convincingly be proposed as a general covering law, suggests something that most would have assumed: the economic intricacies of the EMU are incredibly complex, and cannot be explained solely with reference to the variations in economic freedom. That said, what is clear is that differences in Investment Freedom across nations appear to be linked to a nation’s bilateral outwards trade growth post-EMU. The question that remains to be answered then, is why it was Investment Freedom alone, and not the other two components of Market Freedom—Trade Freedom and Financial Freedom—that corresponded to higher levels bilateral export growth. One potential explanation stems from topics previously discussed but now deserving of further analysis given the empirical results: EU regulations, enforcement, and homogenization.

As has been previously expounded, empirically evidencing the
moderating effects of EMU was not a purpose of this paper, primarily due to data inadequacy. Given the lack of year-by-year data for all data involved it would be impossible to pinpoint a moderating effect as a result of EMU—particularly given that the effect might be a lagged effect. That said, it would appear from the empirical results that the various regulations and treaty obligations that govern EMU and EU economic convergence in general affect various national economic characteristics in heterogeneous ways. Investment Freedom, Trade Freedom, and Financial freedom were not subject to the same degree of homogenization—something that may account for the differences between the correlative power of the regressions ran in this paper. Trade Freedom, for example, is codified examining non-tariff barriers to trade as well as tariff barriers to trade, and other obvious forms of protectionism. Given that EU regulations have largely homogenized—and quite successfully so—tariff policy, as well as eliminated other obvious forms of protectionism⁴, this means that the Trade Freedom Variable will inherently vary only a small amount at best, as the only codified determinant of real Trade Freedom not homogenized by EU regulations is non-tariff barriers to trade. Even then, non-tariff barriers are difficult to identify, further decreasing the utility of a Trade Freedom Variable.

The lack of correlative strength of the Financial Freedom variable is understandable for the same reasons as mentioned previously in the case of Trade Freedom—it would appear as though the elements of Financial Freedom that would be of relevance to the export industry have been subjected to homogenization as a result of EU regulations. When conceptualizing financial freedom, the focal point is the banking system; however, the real role that banks play in affecting exportation specifically is in their influence of exchange rates—controlled by the Central Bank (Alesina et al. 1999). Given that all the Eurozone has a common currency that is regulated unitarily by the European Central Bank, the differences in Central Bank behavior that in part contribute to the codification of the Financial Freedom variable are nullified due to Central Bank homogenization in the EU. Thus, of the three constituent variables of Market Openness, two seem to have been markedly affected by European homogenization. This apparent homogenizing effect was not influential in the case of Investment Freedom, as no EU regulations or treaty obligations—from Maastricht, to the Stability and Growth Pact, to its modern amendments—regulate investment in any substantive capacity, instead focusing on budgetary or monetary restrictions (Crowley 2005). It would thus appear that the relative importance of Investment Freedom in affecting bilateral intra-EMU export

⁴ See EC regulations 1466/67—basis of Stability and Growth Pact
growth as compared to the other components of Market Freedom was due to the fact that many elements of economic freedom were homogenized—even if just partially—by EU regulations, while issues of Investment Freedom remains largely unregulated. In summation, the empirical findings of this paper suggest that Investment Freedom is one of the characteristics that still substantially determines a state’s competitiveness after the homogenization of various other economic determinants of state competitiveness via EMU and EU regulations.

As with any econometric analysis, the conclusions possible are largely determined by the quality and availability of the data; thus, many of the possible avenues for further research stem from the possibility of the emergence of better data in the future.

First, if year-by-year data for bilateral export growth before 2003 becomes available in the future, a similar study to this could be completed that could also empirically examine the moderating effects of EMU on the various determinants of state competitiveness, while in this paper the moderating effects were only assumed based on theory given lack of necessary data. Moreover, as more recent data become available, a continuation of a study similar to this could be conducted that expands the temporal range considered beyond 2003. Such data would allow for an examination of the potential moderating effects of other important developments in EU/EMU regulations such as the 2005 renegotiation of the Stability and Growth Pact and the more recent developments pertaining the Greek financial crisis.

Aside from possible continuations of research similar to this paper, the empirical findings of this paper suggest a need for different types of research to be conducted to further understand the determinants of intra-EMU export growth, and, by extension, the intricacies of the European economic system. In the section on discussion of empirical findings, a variety of promising potential case studies emerge. The great disparity in Investment Freedom in France when compared to all other EMU nations is definitely a subject that warrants further exploration on a more targeted level, perhaps in the form of a case study. Similarly, the Greek situation is an obvious candidate for case study—something in which many scholars are currently undoubtedly engrossed. These are but a few of the potential avenues for further research that seem particularly appropriate in light of this research. I anticipate a large influx in EMU/EU economics-related scholarly contributions in the coming months, as the precarious Greek situation brings back into question a variety of fundamental issues regarding the strength of the entirety of the Eurozone.

In conclusion, this paper has demonstrated that of all the subcategories of economic freedom, the data suggest that Investment Freedom has the
greatest correlative strength in predicting bilateral intra-EMU export growth. The effects of EU economic homogenization and EMU moderation on the various determinants of state competitiveness are incredibly complex, and the dearth of very strong correlative relationships between the independent variables explored in this paper and outwards intra-EMU trade growth suggest that even after homogenization, the determinants of bilateral export growth intra-EMU remain multitudinous, while Investment Freedom appears to be one of the most influential among them.
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