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## Socio-Cultural Impacts on Drug Trafficking Trends in Europe

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### Abstract:

A myriad of national and international publications have detailed global patterns of drug trafficking for decades, with recent reports identifying Europe as a global consumption “hotspot” for the majority of popular drugs in the world. Yet, despite increasing levels of drug trafficking worldwide, scholars have not routinely examined this crime-type through the lens of a socio-cultural criminological theory. As such, this empirical study employed guidance from Institutional Anomie Theory. Data were collected from fourteen countries in Europe from 1995 to 2009 and analyzed using pooled cross-sectional multivariate time series. Trafficking patterns in cannabis, heroin, cocaine, and amphetamines were operationalized using officially reported drug seizure amounts. The findings from this study emphasize the need for differentiation between drug-types in future research, but also illustrate support for use of the theoretically informed variables.

### Key Words:

- Drug trafficking
- Time series
- Institutional Anomie Theory
- Europe

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## Socio-Cultural Impacts on Drug Trafficking Trends in Europe

### Introduction

Transnational drug trafficking, often associated with organized crime, is one crime-type that is at the forefront of concerns for the global community. This “transnational nature... means that criminal networks forge bonds across borders as well as overcome cultural and linguistic differences in the commission of their crime” (UNODC, 2012). Drug trafficking organizations (DTOs) quickly adapt to new social environments, illustrating their flexible and dynamic qualities. Recognized as one of the most common elements of organized crime (OCTA, 2011; UNODC, 2010), global drug trafficking trends are sensitive to a number of factors, including cultivation and manufacturing of organic and synthetic drugs, transportation means, wholesale markets, and consumer markets (Council of Europe, 2005; Reuter and Haaga, 1989; UNODC, 2014). In 2010, the United Nations Office on Drugs and Crime (UNODC) identified the European region as a major global consumer “hotspot” for the world’s most popular drugs. Indeed, Europe contains one of the top consumer markets for heroin worldwide, and the cocaine market has greatly expanded in Europe since the 2000s (UNODC, 2014).

Within Europe itself there exist differential trends, particularly within the Central and Eastern European (CEE) countries. Not only does there exist a high demand market for illicit goods and services among these nations, but these countries also house well-established trafficking routes into Western Europe from Asiatic and Middle Eastern regions. Countries such as Poland have further been identified as some of the leading producers of amphetamines in the world (DEA, 2004; EUROPOL, 2011; Krawczyk et al., 2009; Reitox National Focal Point,

2011). This indicates that CEE countries, composed of countries in transition,<sup>1</sup> are both a destination for illicit goods and services and a source for some of these illicit products, but also house established trafficking routes into Western Europe that DTOs have exploited.

Importantly, global drug markets have remained lucrative, corresponding with the increase in prevalence of such organizations worldwide over the past three decades, costing nations billions in lost revenues and enforcement expenses. The United States government (including local, state, and federal levels), for instance, spent (domestically) over 480 billion USD in 2011 combating drug trafficking organizations, while the revenue denied these organizations (through arrests and seizures) was approximately 19.3 billion (DEA, 2012). By comparison, the estimated annual market value of cocaine shipments from South America to North America was recently estimated at 38 billion USD and the estimated annual global market value for Afghan-produced heroin was 55 billion USD (UNODC, 2010). Enforcement efforts worldwide are seizing a proverbial drop in the bucket in terms of related proceeds and products from DTOs, and nations have not yet found a way to effectively limit the profits gained from these illicit activities.

While global and regional drug trafficking trends have traditionally been examined through an economic lens (Arsovska and Kostakos, 2008; Paoli and Fijnaut, 2006; Reuter, 2000), this study applied a socio-cultural approach. More specifically, this study made significant contributions to the field by empirically examining the impact of various cultural and institutional forces on drug trafficking patterns in fourteen countries in Europe<sup>2</sup> while accounting for changes over a fifteen-year time period (i.e., 1995 to 2009). Trafficking patterns in cannabis,

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<sup>1</sup> Countries are considered to be in transition are those that experienced or were impacted by the collapse of the USSR in 1989.

<sup>2</sup> Austria, Belgium, France, Germany, Greece, Ireland, Italy, Lithuania, Poland, Portugal, Spain, Slovakia, Sweden, and the United Kingdom

heroin, cocaine, and amphetamines were modeled separately and were operationalized using officially reported drug seizure amounts. Importantly, this study extends the application of Institutional Anomie Theory (through the work of scholars such as Cullen, Parboteeah and Hoegl (2004), Maume and Lee (2003), Bjerregaard and Cochran (2008), and most recently, Dolliver (2014)) to the transnational phenomenon of drug trafficking. This article takes the following course. First, global drug trafficking patterns and European significance are briefly examined, followed by a discussion of the criminological theoretical framework used to guide this study. Data and methods are then presented, followed by the results. This article concludes with a discussion of the findings and larger implications.

### **Global Drug Trafficking Patterns and European Significance**

The United Nations Office on Drugs and Crime (UNODC) (2010; 2014) keeps a constant pulse on drug trafficking activity throughout the world, indicating geographic areas most at risk for being used or corrupted by these organizations for natural resources or trafficking routes, and those areas most at risk of becoming destination countries for DTOs. The most commonly trafficked drugs include heroin, cocaine, cannabis (now including synthetic cannabinoids), and various forms of amphetamines (Council of Europe, 2005). Cannabis cultivation remains widespread across the globe, as cannabis herb is currently grown in almost every country in the world (UNODC, 2014). These factors, together with the broad popularity and widespread demand for cannabis products, dilute distinctive cannabis-related trafficking patterns.

Cocaine and heroin are two of the world's most lucrative drugs and originate from two distinct source regions (UNODC, 2010). The Andean region (Peru, Bolivia, Columbia) is the world's main source region for cultivating coca plants that are then harvested and made into cocaine (UNODC, 2010; 2014). This region faces fewer threats from non-drug related crime

groups; the majority of threats center on cocaine trafficking and subsequent corruption of local officials. Once the cocaine leaves the Andean region, it is trafficked north through Central America and eastward largely through Venezuela, with the main destination regions being Western and Central Europe, the United States, and to a lesser extent, West Africa (UNODC, 2010; 2014).<sup>3</sup> Heroin is derived from poppy plants, originating largely from Afghanistan, Myanmar, and Central Asia. This substance has been recognized as “the world’s most problematic drug” (UNODC, 2010: 109) for its high addiction qualities, severe withdrawal symptoms, deaths from overdoses, and method of use.<sup>4</sup> The annual global flow of heroin has been estimated by the UNODC (2010) at 430-450 tons, with the most common trafficking routes beginning in Afghanistan, entering Western and Central Europe via Turkey and the Balkans (OCTA, 2011; UNODC, 2014). However, in recent years heroin trafficking routes have diversified, to include the Black Sea Route via Iran, Azerbaijan, Georgia, and Ukraine destined for Europe. Increasingly, DTOs have utilized maritime shipments of heroin from Iran and Pakistan through the Mediterranean Sea, as well as trafficking the drugs from source countries via commercial and freight air into Europe (OCTA, 2011).

Amphetamine-type-stimulants (ATS), which include methamphetamine and ecstasy-type substances, experience different trafficking patterns from source to destination countries due to their synthetic nature. The most recent data indicate methamphetamine accounts for the majority of global seizures of ATS (roughly 80%), and two thirds of these global seizures occur in North America (UNODC, 2014). Major sources of methamphetamines include the U.S., Mexico, and China, but current trends indicate that methamphetamine trafficking is becoming more global in

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<sup>3</sup> Highly organized DTOs, such as the FARC and ELN, have used this cocaine source region to finance further illegal enterprises, with these groups making over 70% of their total income (an estimated US\$6.6 billion)<sup>3</sup> from cocaine related activities (UNODC, 2010: 229).

<sup>4</sup> Heroin is most commonly administered through injection, raising additional concerns for the transmission of diseases such as HIV/AIDS and Hepatitis C (DEA, 2012; OCTA, 2011).

nature as popularity has increased since the late 2000s. Amphetamine continues to dominate markets in the Middle East and Southwest Asia, and while demand is slightly decreasing in Europe for amphetamine, amphetamine derivatives remain a popular drug of abuse particularly in this region. Additionally, Central and Eastern European countries have been recognized as significant producers of ATS. In 2004, Poland was recognized by the U.S. Drug Enforcement Administration as a main source of amphetamines seized in European countries. Since this time, Belgium and the Netherlands have joined Poland as major ATS producing countries, shipping these products worldwide.

From these global trafficking patterns, it is evident that country-specific law enforcement efforts are not the only factors influencing trends in various drug markets. Traditionally, geographic proximity to source regions played a large role in the creation of major destination hotspots where the majority of drugs were consumed; however, the forces of globalization have recently begun to shift these trends. That is, the rapid development of new psychoactive substances (NPS) has been spurred on by advancements in chemistry (UNODC, 2014), and drug users have in recent years begun to turn to online markets to purchase illicit substances (e.g., Dolliver, 2015). Yet, Europe has remained a major player in the global flows of the world's most popular drugs. Indeed, the Council of Europe (2005) noted "Europe is probably the most profitable drug market globally" (6). European countries once under the sphere of influence of the U.S.S.R. have had a hand in this formation of Europe as a major destination region, as DTOs have exploited the disorganization and lax border controls in these transitioning countries (Summers and Pływaczewski, 2012), essentially creating a "gateway to the West" for traffickers. With this plethora of dynamics existing within the region, a further look at the Western and

Central European countries more closely is warranted to uncover any additional factors driving macro-level drug trafficking trends in this area.

### **Theoretical Perspective**

Theoretical applications have been limited in the majority of prior academic research on drug trafficking patterns (often associated with organized crime research), with few exceptions (e.g., Paoli, 2002; 2008; Shover and Hochstetler, 2002; van Duyne, 1997). That is, while most past work on drug trends has been largely atheoretical, the perspective employed most by past scholars has been an economic approach (e.g., Allum and Sands, 2004; Arsovska and Kostakos, 2008; Becker, 1968; Gambetta and Reuter, 1995; Naylor, 2002; Reuter, 1983; 2000; Reuter and Haaga, 1989; Schelling, 1967; Sullivan, 1973), arguing that drug trafficking trends, development, and activities can be explained by better understanding how illegal drug markets are organized and operate. Yet, this theoretical framework does not account for cultural and structural forces extant to various drug markets that may be differentially impacting global trends and patterns. A handful of other scholars have taken such forces into account, however, by applying (for instance) Globalization Theory to examine “the intensity of transnational connections” (Aas, 2007: 13) facilitated through globalization processes within and among DTOs and their markets (e.g., Passas, 2000). Yet, the small group of studies employing this theoretical perspective resulted in largely qualitative, descriptive accounts.

Researchers have yet to apply one particular, inherently comparative, criminological theory that quantitatively takes both macro-level cultural and social institutional forces within and between countries into account with relation to crime: Institutional Anomie Theory (IAT). Messner and Rosenfeld (1994) introduced this new etiological theoretical perspective after fusing historical influences and developments of key foundational concepts (i.e., culture,



Anomie, comparative sociology, social institutions, functionalism) drawn from Parsons (1937; 1951; 1970), Merton (1938; 1968), and Durkheim (1962/1895). That is, this theory maintains Merton's (1938) equal emphasis (and interconnectedness) on the elements of social organization, while modeling anomic cultural pressures and institutional configurations most conducive to high rates of serious crime (Messner and Rosenfeld, 2009). Messner and Rosenfeld (1994; 2012) suggested that anomic cultures (i.e., cultures that exhibit strong pressures to succeed that also experience a lack of emphasis on legitimate means to do so) coupled with an institutional balance of power dominated by the economy, should result in high rates of crime.

In their theoretical model, Messner and Rosenfeld (1994) identify four values that anchor the concept of "culture:" achievement, individualism, universalism, and a fetishism of money. "Achievement" relates to the pressures felt in a society that is encouraged to succeed "by any means necessary," to "pull themselves up by their bootstraps" and make something of themselves. This success is, to a large extent, the defining measure of a person's value. Closely related to the idea of "achievement" is "individualism," which Messner and Rosenfeld (1994) defined as the cultural drive for individual autonomy and emphasizes individual achievement. Pressures related to the survival of the fittest pits members of society against each other in attempts to gain status and succeed. In an anomic society, these two cultural values are universally emphasized and become the basis of individual social reform. This "universalism" of successes and failures are equally emphasized among community members (Messner and Rosenfeld, 1994). Finally, the cultural value of "fetishism of money"<sup>5</sup> fits in well with the other three cultural values, as it is the tangible "thing" that binds the cultural values together. This emphasis on monetary gain is held as the "metric" or "measuring rod" of success in an anomic

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<sup>5</sup> Late renamed "pecuniary materialism" (Messner and Rosenfeld, 2012).

society.<sup>6</sup> This maintains continuity with Merton (1938), as Messner and Rosenfeld (1994) explained that Merton did not intend for his theory to be about “simple economic deprivation, or poverty” (59), but rather it was designed to illustrate how cultural elements can *condition* the impact of social structure on crime. When a society cultivates an anomic cultural environment, citizens experience these four cultural pressures to succeed and are “encouraged to adopt an ‘anything goes’ mentality in the pursuit of personal goals” (Messner and Rosenfeld, 1994: 68).

The second half of Messner and Rosenfeld’s (1994) theoretical model expanded on Merton’s (1938) conceptualization of “social institutions” by surmising that this social organizational element is best explicated through four main institutional pillars relevant to the explanation of crime: the economy, the polity, the family, and education. Drawing from Parsonian (1951) elements of the Action System, Messner and Rosenfeld argued that these four social institutions develop differentially (according to) based on the social needs in each country. For instance, the authors point out how the economic institution in the U.S. strongly supports the cultural values of the American Dream (i.e., the quintessential example of an anomic culture); thus, Messner and Rosenfeld (1994) claimed that adaptation to the environment is primarily responsible for the strong development of this institution in the United States. The economic institution is reinforced by the emphasis on cultural goals of money and wealth (Merton, 1938; 1968; Messner and Rosenfeld, 2012), therefore responding to the other basic social needs by mobilizing and deploying economic resources necessary for the achievement of these cultural goals and socializing members of society to accept the normative patterns of capitalism. Messner and Rosenfeld (1994) predicted that a society that emphasizes economic institutional success over the other three non-economic institutions should experience correspondingly higher rates of

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<sup>6</sup> This is related to Merton (1938) and Passas’s (1997) concept of a comparative reference group, in which the cultural values of this comparative reference group are used as a measuring-rod for others.

crime, since this institutional balance is most supportive and congruent with anomic cultural pressures to succeed. In all, it is this interaction between core cultural values leading to levels of anomie and the unique institutional balance of power that results in varying levels and types of crime between nations (Messner and Rosenfeld, 2009).

While this theory was designed to explain crime patterns cross-nationally, it has been primarily tested using homicide-related data (e.g., Baumer and Gustafson, 2007; Bjerregaard and Cochran, 2008a; 2008b; Chamlin and Cochran, 1995; Dolliver, 2014; Gross and Hausman, 2011; Jense, 2002; Messner and Rosenfeld, 2009; Stucky, 2003; Zhao and Cao, 2010), with scholars struggling to operationalize the different components of IAT. Indeed, the elements composing social organization, namely culture and social institutions, are difficult to describe and interpret across and within nations and at global levels. However, IAT has created a theoretically grounded framework from which to interpret these concepts and apply them to various forms of serious crime. As such, this study sought to extend the IAT literature to the application of transnational drug trafficking.

### **Methods and Data**

Given this theoretical context and Europe's significant position within the global drug trade, the present analysis empirically examines drug trafficking patterns in Europe over a fifteen-year period (1995 to 2009) using theoretically informed variables. The following fourteen countries in Europe were selected based on geographical representation and reliably reported indicators from 1995 to 2009 with the least amount of missing data: Austria, Belgium, France, Germany, Greece, Ireland, Italy, Lithuania, Poland, Portugal, Spain, Slovakia, Sweden, and the United Kingdom. The number of countries was significantly limited due to the criteria for inclusion in this study; that is, to be included, the country had to report drug seizure amounts

consistently for all four drug-types and all eleven independent variables over the fifteen-year time period. As such, due to large amounts of missing data in one or more variables, countries known to have a significant role in the European drug trade (e.g., the Czech Republic, the Netherlands) could not be considered in the study. Using multivariate time series regression analyses, the data for these fourteen countries were pooled together in order to examine the European region as a whole.

The time period for the study was selected based on the inclusion of particular countries in this sample. That is, beginning the time period in 1995 captures any changes or restructuring of the various elements of social organization between developed and transitioning nations (due to the collapse of the USSR in 1989), without risking contaminated or otherwise unreliable data from the years directly following the collapse of the Soviet Union (Krajewski, 2003). For instance, Slovakia was not an independent country until the peaceful splitting of Czechoslovakia in 1993. Thus, 1995 is an appropriate time period to begin collecting data in order to capture the most transitional stages of social change in these countries, which will provide for a richer analysis of these impacts on drug trafficking in the European region.

### ***Dependent Variables***

The dependent variables in this study are indicators of drug trafficking patterns. While some researchers have studied drug traffickers themselves – either in terms of aggregated arrests for drug trafficking offenses (e.g., Bouchard and Tremblay, 2005) or individuals in drug trafficking organizations (e.g., Adler, 1992) – such data are lacking for the time period used in this study and for the countries in this sample. The most common method of examining drug trafficking trends has been to analyze drug markets in terms of types of drugs, price, and supply and demand (e.g., Reuter, 2000; Reuter and Haaga, 1989; UNODC, 2010). While these data are

also difficult to reliably capture over a long period of time across multiple settings, one related measure suggested by the Council of Europe (2000) offered a solution: using drug seizure amounts (in kilograms) for the most commonly trafficked illicit drugs (e.g., heroin, cocaine) to indicate the prevalence of drug trafficking activity within the respective countries (see also UNODC, 2014). Thus, this study utilized the following dependent variables (measured in kilograms per 100,000 population) to enable the analyses to account for regional-level variations in four most globally popular types of drugs: heroin seizures, cocaine seizures (includes crack and powder cocaine), amphetamine seizures (includes all derivatives of amphetamines), and cannabis seizures (does not include hashish).<sup>7</sup> That is, an increase in drug seizures is assumed to be indicative of an increase in drug trafficking activity for that particular drug.

It is recognized, however, that drug seizure amounts may also be indicative of either police interdiction efforts or accuracy of reporting by police departments. This is a concern, as the amounts of drugs seized are in fact done so by the police in each country. To minimize this bias, seizure rates of drugs were checked (when possible) for consistency and correlations with arrest rates for drug trafficking violations, injecting-user rates, and admittance to drug rehabilitation clinics (UNODC, 2014).<sup>8</sup> Further, there has been little published research to suggest that drug seizure amounts fail to reflect broader drug trafficking patterns as well as other indicators (e.g., number of convictions for drug trafficking, drug prices, self-report data), and the nature of drug seizure data makes it a preferable proxy to utilize in this study.<sup>9</sup> To minimize this

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<sup>7</sup> Eurostat supplied these data.

<sup>8</sup> This was accomplished when the data were available for each country along the time series.

<sup>9</sup> For instance, in many countries prosecutors have charging authorities - they have the decision-making power to choose the cases they want to prosecute. This can result in a decision to not prosecute known drug traffickers, weakening this as a general drug trafficking indicator. However, regardless of the number of arrests or convictions, law enforcement officers are required to seize all illegally trafficked controlled substances at the point of encounter. Even if the decision to prosecute is made, it may take years from the point of the original indictment to sentencing, thus building in an inherent lag in the data. Using the price of drugs as a proxy for larger drug trafficking patterns is problematic due to factors including between-DTO competition in local markets and seizures of drugs by police.

bias further, the time period beginning in 1995 was selected purposefully, as this year marks the beginning of more stability in the European region as a whole following the collapse of communism. Given events in Eastern Europe during this time, all data from the first few years of the time series for the Eastern European countries are more likely problematic. This limitation of the data is noted; however, as it could not be corrected for or supplemented, the data were utilized as reported and published.

### *Independent Variables*

The independent variables used in this study were reflective of the socio-cultural elements emphasized by Institutional Anomie Theory; all indicators were used in a recent test of IAT using homicide data by Dolliver (2014) and data were provided by Eurostat, the OECD, Transparency International, the Heritage Foundation, and the World Bank. Elements of cultural pressures to succeed (defined by utilitarian means)<sup>10</sup> were operationalized by the World Index of Economic Freedom,<sup>11</sup> the gross household savings rate,<sup>12</sup> the unemployment rate, and the Corruption Perception Index (CPI) (see Dolliver, 2014). These cultural variables considered together measure the intensity of anomie in each society. That is, as countries experience these cultural pressures to succeed (reinforced by increased levels of economic freedom and increased household savings) in addition to a Mertonian (1938) lack of emphasis on the legitimate means

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Finally, self-reported drug-related data is also problematic to use as an indicator of drug trafficking patterns, since known country or global surveys (e.g., the Global Drug Survey) are often focused on the drug user and not the drug trafficker (e.g., large amounts of heroin may be seized in Poland (for instance) as the drugs are en route to Western Europe, though there may not necessarily be a strong user market for the substance within Poland).

<sup>10</sup> Messner and Rosenfeld (2012) explicitly state cultures that reinforce economic gains and successes are more likely to be anomic.

<sup>11</sup> This Index combines fifty economic indicators that are grouped into 10 “freedoms,” including trade policy, government intervention in the economy, capital flows and foreign investment, and black market activity in approximately 184 countries (Beach and O’Driscoll, 2003; Heritage Foundation, 2012). This index has been used in past tests of the theory (e.g., Bjerregaard and Cochran, 2008a; Dolliver, 2014).

<sup>12</sup> This index is calculated by Eurostat as the gross savings amount divided by the gross disposable income, with the latter being adjusted for the change in the net equity of households in pension funds reserve.

to succeed (reflected in higher unemployment rates and elevated levels of perceived corruption), IAT predicts that these societies will experience correspondingly higher levels of anomie.

The *World Index of Economic Freedom* is compiled by the Heritage Foundation, and includes data from social surveys and officially reported data that reflect the level of openness to free-market capitalism for each country. This Index defines economic freedom as “the absence of government coercion or constraint on the production, distribution, or consumption of goods and services beyond the extent necessary for citizens to protect and maintain liberty itself” (Beach and O’Driscoll, 2003: 2). Messner and Rosenfeld (2009) argue countries that emphasize success in terms of economic freedoms are more likely to be anomic and therefore may experience higher rates of crime. The *gross household savings rate* was also included in this study as a cultural indicator because IAT views money as the “metric” of success (Messner and Rosenfeld, 1994). Given European countries are considered the “hotspot” for drug consumption, the amount of disposable income is a relevant factor. As such, in this study it is expected that as the amount of household savings increases in Europe, the more drug trafficking activity will be anticipated.

The *CPI*<sup>13</sup> was first launched in 1995 by Transparency International, an organization dedicated to collecting and disseminating statistics, policies, and knowledge surrounding corruption in the public sector in over 100 nations around the world (Transparency International, 2012). The Index itself is a composite measure that combines information from a number of polls and surveys with corruption-related data collected by a variety of institutions and official governments. IAT would predict that high rates of perceived corruption in the public sectors indicates legitimate avenues may be threatened for citizens to obtain even the basic necessities.

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<sup>13</sup> The CPI data was provided by Transparency International. To calculate the CPI, the data are first standardized using a matching percentiles technique that takes the ranks of countries reported by each individual score. “This method is useful for combining sources that have different distributions” (Transparency International, 2010: 15). The bounds of the CPI are between 0 and 10 – with 0 being completely corrupt and 10 being the least corrupt.

Consequently, countries indicating very low levels of perceived corruption should be representative of a cultural emphasis on legitimate means to succeed. *Unemployment rates*<sup>14</sup> were also used as a cultural proxy. The rate of unemployment, defined by the World Bank (2012: 1) as “the share of the labor force that is without work but available for and seeking employment,” is an important indicator to include in this study. That is, high unemployment rates significantly hamper the ability for citizens to achieve success goals through legal means, and are also an indicator of an increase in unstructured, free time.

The four social institutions in the IAT model (i.e., economy, polity, family, education) were operationalized by: GDP per capita, Rule of Law, Political Stability, divorce-to-marriage ratio, and level of educational attainment. More specifically, the economy was operationalized in this study using the *Gross Domestic Product (GDP) per capita*, in line with past research (e.g., Bjerregaard and Cochran, 2008a; 2008b; Dolliver, 2014). The GDP per capita serves as “an indicator of the advancement of a country’s economy” (Bjerregaard and Cochran, 2008a). Importantly for IAT, economic growth has the ability to generate material desires for a country’s citizens, while also potentially increasing income inequalities; characteristics identified by IAT as conducive to generating crime. The *Rule of Law* and *Political Stability* indicators<sup>15</sup> were used to represent the political institution, which (according to IAT) is designed to “mobilize and distribute power to attain collective goals... and maintain public safety” (Messner and Rosenfeld, 2012: 75). The Rule of Law dimension<sup>16</sup> “captures perceptions of the extent to which agents have confidence in and abide by the rules of society, and in particular the quality of contract enforcement, property rights, the police, and the courts, as well as the likelihood of

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<sup>14</sup> The World Bank provided these data.

<sup>15</sup> The Worldwide Governance Indicators (WGI) project headed by the World Bank developed these variables.

<sup>16</sup> The Rule of Law dimension is measured in a percentile rank, ranging from 0 to 100. 0 represents the lowest level of governance, and 100 represents the highest.



crime and violence” (World Bank, 2013a: 1). The Political Stability<sup>17</sup> dimension “measures perceptions of the likelihood that the government will be destabilized or overthrown by unconstitutional or violent means, including politically-motivated violence and terrorism” (World Bank, 2013b: 1). In line with IAT’s predictions, this study anticipates that as both governance indicators increase (indicating confidence and strength in the polity), drug seizures will decrease (indicating reduced prevalence).

Levels of primary *educational attainment* was used to operationalize the educational institution, which “aims to enhance personal adjustment, facilitate the development of individual human potential, and advance the general knowledge base of the culture” (Messner and Rosenfeld, 2012: 75) in each country. The primary education level is defined as the percentage of the labor force having completed at least primary schooling (World Bank, 2012). IAT predicts that a stronger educational institution is in a country or region, the lower crime rates will be. The current study anticipates similar findings. Lastly, the familial institution was operationalized as the *divorce-to-marriage ratio*, calculated as the number of marriages divided by the number of divorces per 100,000 population (Cullen, Parboteeah, and Hoegl, 2004; Dolliver, 2014). In past IAT studies (e.g., Bjerregaard and Cochran, 2008a; 2008b; Chamlin and Cochran, 1995; Piquero and Piquero, 1998; Maume and Lee, 2003), the divorce rate has been a consistent measure of a weakened or “broken” family unit (Bjerregaard and Cochran, 2008a). High divorce rates represent family disruption; IAT suggests that as the familial institution weakens, crime rates will subsequently increase.

To ensure that other factors were not significantly influencing these models, the following variables that have been highlighted in broader discussions of recent crime trends (e.g.,

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<sup>17</sup> This dimension is also measured in a percentile rank, ranging from 0 to 100. 0 represents the lowest level of governance, and 100 represents the highest.

Cullen, Parboteeah and Hoegl, 2004) were controlled for: the *percentage of 15 to 24 year olds* and the *percentage of males* in the population (per 100,000). Other macro-level variables (e.g., prison population, number of police officers, interdiction training hours) were unable to be included in the study due to large amounts of missing data for at least one of the fourteen countries spanning 1995 to 2009.

### ***Analytical Approach***

Since this study spanned a fifteen-year time period (i.e., 1995 to 2009), pooled multivariate time series regression techniques were used. That is, data from all fourteen countries were pooled together to represent the European region as a whole and time series techniques were applied to the data to account for changes over time in the dependent and independent variables. The Hausman test<sup>18</sup> was conducted on these European data to determine whether the fixed effects model or the random effects model was a better fit. After correcting for any autocorrelations and/or multicollinearity among the variables, the dependent variables were run using either random or fixed effects (depending on the results of the Hausman test<sup>19</sup>) to determine the differential impacts of the independent variables.

### **Results**

A visual inspection of the four dependent variables (heroin seizures, cocaine seizures, amphetamine seizures, and cannabis seizures) revealed interesting trends (illustrated in Figures 1 through 4 below). For instance, seizures of cannabis experienced the most variation of these four variables. Belgium seized the most cannabis in 1995-1996 (559 kilograms per 100,000 population), but then the trend quickly dropped off, rejoining the majority of the other countries.

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<sup>18</sup> This is a statistical hypothesis test that evaluates the significance of an estimator against an alternative estimator.

<sup>19</sup> In fixed effect models, fixed effects were only included for nations because the time effect was dealt with differently: testing for unit roots was conducted in the context of panel data for all variables (using Stata). For all variables that showed stochastic trend (unit root), the first difference was used in panel regression models. As such, there was no need to account for the time trend.

In the more recent years, 2008 and 2009 specifically, the U.K. has seized significantly more cannabis than the other thirteen included countries. Western European countries also were found to seize more heroin (i.e., Ireland, the U.K., and Sweden), cocaine (i.e., Portugal, Spain, and Belgium), and amphetamines (i.e., Sweden) than the CEE countries of Poland, Slovakia, and Lithuania. The drug seizure amounts alone for this latter group of countries does not support the related literature that suggests prevalence in drug trafficking and manufacturing was particularly high in CEE during this time period (e.g., DEA, 2004; Krawczyk et al., 2009).<sup>20</sup>

[INSERT FIGURE 1 HERE]

[INSERT FIGURE 2 HERE]

[INSERT FIGURE 3 HERE]

[INSERT FIGURE 4 HERE]

In order to quantitatively test these relationships among the independent variables for each of the four drug-types in Europe, pooled cross sectional time series regression analyses were conducted on the data.<sup>21</sup> Table 1 below displays the results for all four dependent variables spanning the fifteen-year time period (i.e., 1995 to 2009). Comparatively speaking, each dependent variable was predicted by at least two independent variables, and all four models were significant at the 99.9% confidence interval.

[INSERT TABLE 1 HERE]

The model predicting cannabis seizures in Europe explained the least amount of variance ( $r^2 = 0.6040$ ). The gross household savings rate (a cultural proxy) and level of educational

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<sup>20</sup> However, this could be the result of a number of issues facing countries in transition, including a lack of adequate and effective reporting of police statistics and interdiction methods and training.

<sup>21</sup> For all time series analyses, the natural log was taken for each variable before running each analysis. This transforms any series that might be expected to grow (exponentially) over time (i.e., experience variance instability); thus, taking the natural log is done to attempt to stabilize the variance volatility (Yaffe and McGee, 2000).

attainment (an educational institution proxy) were predictive of this dependent variable. That is, as the gross household savings rate increased by one percent, cannabis seizures also increased by 0.60 kilograms per 100,000 population. Additionally, as the level of primary educational attainment increased by one unit, seizures of cannabis were found to decrease by 1.64 kilograms per 100,000 population. This indicates that the single significant cultural proxy predicted an increase in cannabis trafficking patterns in this European sample, while the educational proxy predicted a decrease in this activity. Both of these findings support the theoretical predictions of IAT, but this model had the fewest significant variables of the four analyses.

The model predicting heroin seizures explained roughly 66% of the variance and was predicted by five variables, two representing cultural proxies and three representing social institutional proxies. The two significant cultural proxies were found to be supportive of IAT's predicted pressures to succeed; that is, as both countries moved towards economic freedom and increased their gross household savings rates, heroin trafficking subsequently increased. Two of the institutional proxies were also supportive of IAT's predictions in that a strengthening of the polity and educational institutions led to decreases in heroin seizures. However, a weakening of the family unit was also found in this study to decrease heroin-related drug trafficking.

Regarding cocaine seizures in Europe, only two social institutional variables and two control variables significantly predicted this dependent variable. A strengthening of the economy was found to significantly increase the amount of cocaine seizures (by 1.21 kilograms per 100,000 population), but again a weakening of the family unit was found to decrease the seizure rate of cocaine. Increases in the percent of population that is male and the percent of the population between the ages of 15 and 24 (covering the peak of the age-crime curve) were also found to be significant predictors of cocaine trafficking activity.

Explaining the most variance among the four models ( $r^2 = 0.8927$ ), the amphetamine seizure model illustrated general support for IAT's predictions. The more countries in this European sample moved towards economic freedom during the time period, seizure rates of amphetamines increased by 5.47 kilograms per 100,000 population. This indicates that cultural pressures defined as economic freedom did positively impact amphetamine-related drug trafficking patterns. Similarly, as the economic institution strengthened, seizures of amphetamines also increased, and as the political institution strengthened, amphetamine seizures subsequently decreased. Impressively, the percentage of the population that is male significantly impacted the rate of amphetamine seizures. That is, as the percent male in the region increased by one percent, seizures of amphetamines increased by 107 kilograms per 100,000 population.

Given the theoretical guidance from Messner and Rosenfeld's (1994) IAT, the findings of this study were mixed. That is, no single model experienced an overabundance of significant variables for either the cultural or institutional proxies, and none of the proxies were consistently significant across the models. However, this is not wholly unexpected, as the trafficking patterns for these four types of drugs are known to differ from each other (UNODC, 2014) and therefore might be impacted by different extant forces. Yet, some interesting patterns did emerge between the models. For instance, this study found increases in cultural proxies to positively influence drug trafficking patterns in cannabis, heroin, and amphetamines. That is, an increase in an economic free-market environment did correspond with increased heroin and amphetamine activity, while an increase in discretionary income (i.e., savings) corresponded with increased cannabis and heroin activity. With regards to social institutional proxies, a strengthening of the GDP was found to increase cocaine and amphetamine activity, while a strengthening of political stability/rule of law and educational attainment were found to decrease drug trafficking activities

(heroin and amphetamines, and cannabis and heroin respectively). Interestingly, all of these relationships (with one exception<sup>22</sup>) were supportive of the cultural-institutional balances predicted by IAT.

## **Discussion and Conclusion**

Policymakers and international organizations around the world have recognized transnational drug trafficking to be a chief concern to national and international security (Council of Europe, 2005; FBI, 2012; OCTA, 2011; UNODC, 2012; 2014). As a result, many related publications have expertly detailed global drug trafficking patterns and legislation developed by various countries and governing bodies to curb the prevalence of drug trafficking activities. These reports have further identified Europe as one global “hot spot” for drug consumption (e.g., UNODC, 2010). Various countries within Central and Eastern Europe (CEE) have added to this title due to porous borders, lagging interdiction training for police, and economic and political systems still in transition periods.

Even with these increasingly high levels of drug trafficking activity worldwide, criminologists have not routinely examined this crime-type through the lens of a socio-cultural theory. Instead, this global phenomenon is most often studied in the context of organized crime, and criminologically considered by theoretical perspectives rooted in economic-based explanations of crime (Arsovska and Kostakos, 2008; Becker, 1968; Gambetta and Reuter, 1995; Naylor, 2002; Reuter, 1983; 2000). As such, this study significantly contributed to the field by employing guidance from one socio-culturally based macro-level criminological theory: Institutional Anomie Theory (IAT). IAT, developed by Messner and Rosenfeld in 1994,

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<sup>22</sup> The only observed relationship that did not support the theoretical predictions was the familial proxy. This study found that as the ratio of divorces-to-marriages increased (indicating a weakening of the family unit), trafficking in heroin and cocaine decreased. IAT would argue that this should not be the case – a weakened family unit should increase the prevalence of drug trafficking.

maintains equal emphasis on two of the main elements of social organization (culture and social institutions) in the context of anomie. That is, this theory suggests that anomic cultures (i.e., cultures that exhibit strong pressures to succeed that also experience a lack of emphasis on legitimate means to do so) coupled with an institutional balance of power dominated by the economy should experience higher rates of crime. Given this context, this study quantitatively explored how cultural and/or social institutional variables impacted four drug trafficking trends (operationalized as drug seizure rates: cannabis, heroin, cocaine, amphetamines) in fourteen European countries<sup>23</sup> over a fifteen-year time period (1995 to 2009).

The findings from this study emphasize the need for differentiation between drug-types in future research, but also illustrate support for use of the IAT informed variables. That is, no single cultural or institutional proxy consistently predicted changes in all four models, and different combinations of variables were found to significantly impact cannabis, heroin, cocaine, and amphetamine trafficking patterns (see Table 1). The amphetamine trafficking model was the strongest, explaining 89% of the variance, though all models explained at least 60%. Patterns in heroin and amphetamine activities experienced the most variation in significant cultural and institutional proxies. For instance, increases in economic freedom and gross household savings rates significantly predicted increases in heroin trafficking over the time period of the study, while strengthened political stability and educational attainment in Europe predicted a decrease in this dependent variable. Likewise, a strong GDP and economic free-market environment predicted increases in amphetamine trafficking, while an increase in the perceived confidence in the rules of society (i.e., rule of law) predicted a decrease in this phenomenon.

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<sup>23</sup> Austria, Belgium, France, Germany, Greece, Ireland, Italy, Lithuania, Poland, Portugal, Spain, Slovakia, Sweden, and the United Kingdom.

However, cannabis activity was only marginally impacted by two variables (household savings and educational attainment) and the model explained the least variance of the four. These results are interesting; cannabis is the most widely available of the four drug-types and arguably the hardest to conceal because of its bulky quality compared to powder or tablet forms of the other drugs (UNODC, 2014). Moreover, drug users can easily grow cannabis in small amounts for personal consumption. As such, it is expected that the police should seize more cannabis from non-drug traffickers, which adds to the total number of kilograms seized by police and may have distorted this variable as an indicator of broader trafficking patterns. This is not likely the case, though, with regards to cocaine patterns in Europe. The coca plant can only be grown in the Andean region of South America (UNODC, 2010), and thus the final product must be clandestinely shipped to its destination. According to this study, only the divorce-to-marriage ratio and the GDP (both institutional variables) predicted significant changes in this dependent variable. As this was the only model in the study that was not predicted by any cultural variables, additional research is needed to explore this finding.

Interestingly, perceived level of corruption and unemployment rates (i.e., two cultural proxies) were not significant predictors of changes in patterns in any of the drug-types. Corruption levels are known to most greatly impact sources regions for drugs (UNODC, 2010); this particular finding may be explained given that only a few of the countries in this sample<sup>24</sup> are known to be major sources for the drug-types studied in this research. The lack of significant findings with regards to unemployment rates is interesting and unexpected, and one that deserves additional attention in future research.

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<sup>24</sup> Some CEE countries (e.g., Poland) are known to produce amphetamines, though the market for this drug-type is relatively smaller than that of cocaine or heroin (UNODC, 2010). Belgium is also a known producer of ATS.



Overall, the findings of this study have implications for future drug control policies in Europe. As IAT suggests (and this study supported), strengthening non-economic institutions may counter the effects of a stronger economy or strong anomic cultural pressures to succeed (Messner and Rosenfeld, 2009). With regards to heroin trafficking, for instance, a strengthening of the confidence in political stability and educational attainment within Europe may reduce the prevalence of heroin trafficking. Future research is needed, however, to further investigate these relationships. Nonetheless, this study has provided policymakers with more comprehensive tools from which to build more effective policies and initiatives designed to curb drug trafficking activities by considering additional theoretical factors outside of the realm of economic models. Moreover, stressing the importance of a comparative context, IAT provides a well-suited framework from which to study these transnational trends, and scholars should continue to explore cultural and social institutional forces impacting drug trafficking patterns around the world.

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Table 1. Pooled Cross-Sectional Multivariate Regression Results with Fixed Effects ( $n = 210$ ;  
B(SE))

Variable	Cannabis Seizures	Heroin Seizures	Cocaine Seizures	Amphetamine Seizures
<b>Cultural Proxies</b>				
W.I. of Econ. Fred.	-0.83(2.92)	5.70(1.38)***	1.74(2.36)	5.47(2.69)*
G.H. Savings Rate	0.60(0.31)*	0.44(0.22)*	0.17(0.29)	0.10(0.34)
CPI	-0.83(1.01)	-0.83(0.80)	-1.26(0.94)	-1.26(1.07)
Unemployment	-0.36(0.48)	-0.34(0.33)	-0.25(0.38)	0.21(0.44)
<b>Social Institutional Proxies</b>				
GDP per capita	-0.28(0.59)	-0.65(0.40)	1.21(0.47)*	1.10(0.34)***
Rule of Law	-0.45(3.01)	1.24(2.05)	2.85(2.43)	-6.98(2.77)*
Political Stability	0.99(1.04)	-1.35(0.72)*	-0.63(0.84)	1.24(0.96)
Divorce-to-marriage Ratio	-0.79(0.52)	-1.37(0.54)*	-2.78(0.64)***	-0.07(0.72)
Educational Attainment	-1.64(0.51)**	-2.26(0.65)***	-0.77(0.77)	-1.01(0.88)
<b>Control Variables</b>				
Population Male	97.58(44.85)	36.09(30.33)	84.32(35.88)*	107.23(33.96)***
Population % Ages 15-24	-1.01(2.68)	-2.57(1.81)	-8.17(2.15)***	3.23(1.30)*
Adjusted $R^2$	0.6040	0.6644	0.7840	.8927
<i>Prob &gt; F</i>	***	***	***	***

Note: \* $p < 0.05$ ; \*\* $p < 0.01$ ; \*\*\* $p < 0.001$

Public

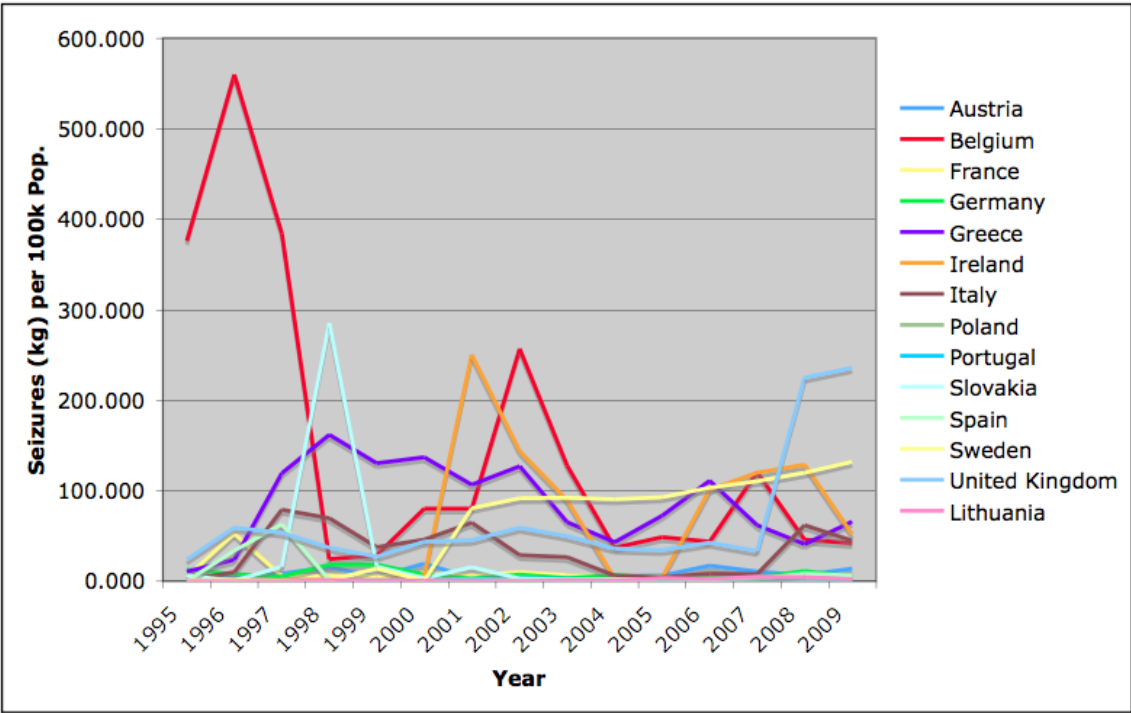


Figure 1. Cannabis Seizures in Europe

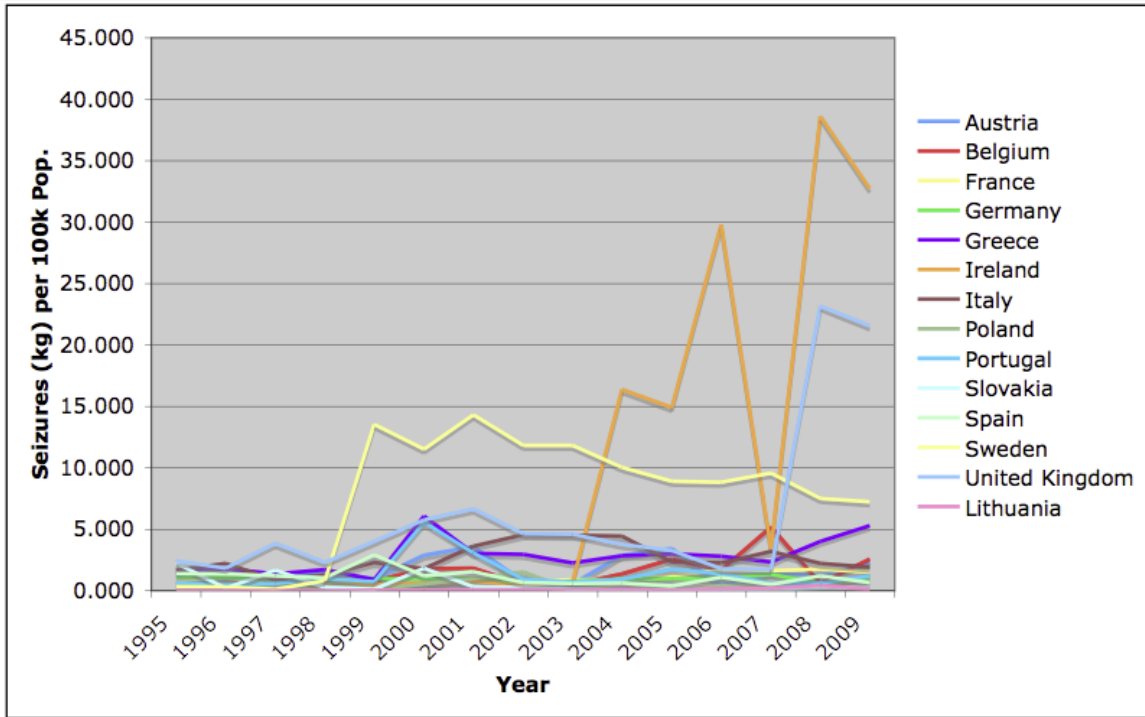


Figure 2. Heroin Seizures in Europe

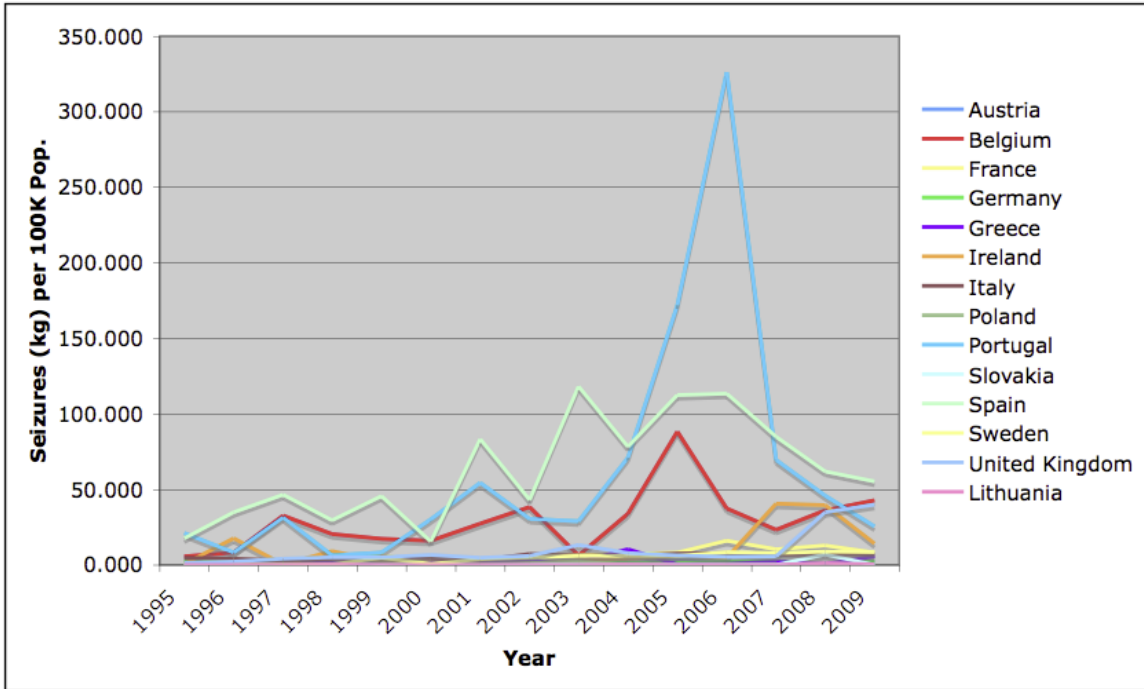


Figure 3. Cocaine Seizures in Europe

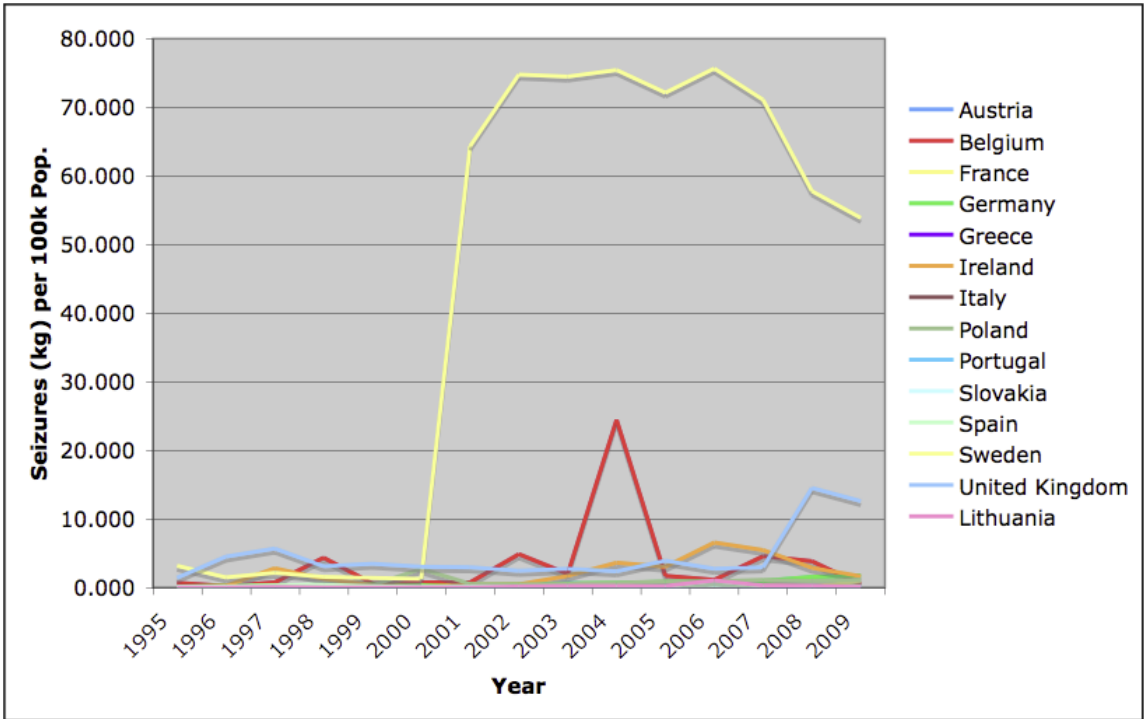


Figure 4. Amphetamine Seizures in Europe