

DUKE
ECONOMICS
REVIEW

EQUILIBRIA

Fall 2015

**The Vote Against
Legalizing Marijuana**

Young Money, More Problems

**Temporary Asymmetric Shocks in
The Eurozone**

**Effects of Dropping
Lowest Test Scores**

**Islamic Finance
An Emerging Market**



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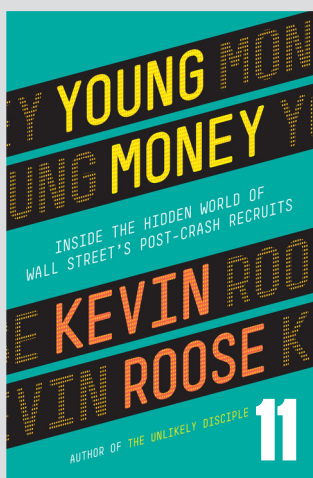


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THE VOTE AGAINST LEGALIZING MEDICAL MARIJUANA

UNDER THE INFLUENCE OF CAMPAIGN CONTRIBUTIONS OR IDEOLOGY?

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“This amendment is recognized as States’ rights to oversee the medical scope of practice of doctors in their States, to prescribe drugs as doctors see as necessary for medical conditions.” (Mr. Farr, California)

“Now, the so-called phrase ‘medical marijuana’ is a misnomer. It was invented by the people who passed the proposition in California that, frankly, hoodwinked the voters of California into voting in favor of it.” (Mr. Ose, California)

Congressional Record, July 7, 2004

WITH THE PASSAGE OF PROPOSITION 215, or The Compassionate Use Act, in November of 1996, California became the first U.S. state to grant seriously ill citizens “the right to obtain and use marijuana for medical purposes where that medical use is deemed appropriate and has been recommended by a physician who has determined that the person’s health would benefit from the use of marijuana...” As a result of this unprecedented legislation, patients and providers of medical marijuana no longer face the threat of arrest by state or local law enforcement authorities. Subsequently, ten additional states have adopted legislative policies that either legalize or decriminalize the use of marijuana for medical purposes.

However, medical marijuana users in states with legal protections can

still be arrested or imprisoned under federal law. The federal government, as enunciated in the Controlled Substances Act of 1970, defines marijuana as a Schedule I substance, a substance that: (i) exhibits a high potential for abuse, (ii) has no documented medical value, and (iii) has a lack of accepted safety for use of the drug under medical supervision. The Drug Enforcement Administration (DEA), empowered by the federal government, is charged with the enforcement of the Controlled Substances Act. Consequently, the DEA maintains and exercises the federal authority to arrest any person who possesses marijuana for any reason in any U.S. state or locality.

As early as 1998, Congress addressed the conflict between state and federal law on the issue of medical marijuana. On September 15, 1998, the

House passed House Joint Resolution 117 by a vote of 310-93, “[e]xpressing the sense of the Congress in support of the existing Federal legal process for determining the safety and efficacy of drugs, including marijuana and other Schedule I drugs, for medicinal use.” In passing this measure, Congress overwhelmingly expressed the sentiment that federal marijuana law should trump states’ marijuana laws. Despite the passage of H.J.R. 117 in 1998, supporters of medical marijuana have continued to author and sponsor resolutions that would recognize state policy as the sole determinant of medical marijuana legality. In 1999, Barney Frank (D-MA) drafted H.R. 912 (“The Medical Use of Marijuana Act”), a bill that would have reclassified marijuana as a Schedule II drug and permitted its use “as prescribed or recommended by a physician.” Effectively, H.R. 912

would have instituted the patients' right to medical marijuana as federal policy. In 2001, Barney Frank submitted H.R. 1344, "To provide for the medical use of marijuana in accordance with the laws of the various States." H.R. 1344 narrowed the focus of H.R. 912 by proposing that the federal government recognize the legality of medical marijuana only in states that pass protections for medical marijuana users. Like H.R. 912, H.R. 1344 failed. In ensuing years, similar resolutions have unsuccessfully attempted to legalize medical marijuana (H.R. 2592 in 2001-2002, H.R. 2233 in 2003-2004, and H.R. 1717 in 2003-2004).

In an effort to assert and affirm federal law, DEA agents continue to raid the homes of state-sanctioned medical marijuana users as well as state-recognized farms that provide cost-free cannabis to patients who are too infirm to grow their own. One such incident occurred in 2002 when deputies from the Butte County, California Sheriff's Department and agents from the U.S. Drug Enforcement Administration clashed at the home of Diane Monson. After a thorough investigation, Butte County deputies deemed the marijuana to be legal, in accordance with California's Proposition 215; the DEA agents classified the marijuana as a Schedule I narcotic; they chopped down and confiscated the contraband. In response to the raid on the Monson home and patients' growing fear of the DEA, Diane Monson, Angel Raich (a terminally ill medical marijuana user), and two others filed suit against then-U.S. Attorney General John Ashcroft and former DEA Director Asa Hutchinson (*Raich v. Ashcroft*).

The present paper analyzes House members' roll call votes on the Farr-Rohrbacher Amendment to H.R. 4754, a bipartisan initiative to prohibit the use of federal funds in the bill to prevent the states from implementing state laws authorizing the use of medical marijuana. On July 7th, 2004, the Farr-Rohrbacher Amendment was rejected by a 2/3 majority, 266-148 in the House of Representatives. Section 2 presents a brief history of the medical marijuana debate among medical professionals. Section 3 discusses the public opinion of medical marijuana legalization and condenses the House floor debate on the amendment into memorable quotes from the Congressional Record. Section 4 presents the regression analyses of the House vote on the amendment and the main findings. Section 5 provides the conclusion to the paper.

THE MEDICAL PROFESSION AND THE MEDICAL MARIJUANA CONTROVERSY

The medical value of marijuana has been widely debated and disputed since early 20th Century. In 1937, the federal government's Marijuana Tax Act recognized marijuana as a potentially dangerous intoxicant. In response to the waxing popularity of marijuana during the 1960s, the Controlled Substances Act of 1970 classified marijuana as a Schedule I Drug, one for which no redeeming medical value is said to exist. Meanwhile, patients suffering from a host of serious and terminal illnesses (including AIDS, glaucoma, cancer, multiple sclerosis, epilepsy, and chronic pain) claimed that marijuana provided them a degree of respite from the discomfort of their chronic symptoms. According to Joy et al. (1999),

after states began enacting protective medical marijuana legislation in 1997, the Office of National Drug Control Policy (ONDCP) "asked the Institute of Medicine to conduct a review of the scientific evidence to assess the potential health benefits and risks of marijuana and its constituent cannabinoids." The same study by the Institute of Medicine advances several important conclusions. First, the study indicates that, "The accumulated data indicate a potential therapeutic value for cannabinoid drugs, particularly for symptoms such as pain relief, control of nausea and vomiting, and appetite stimulation." This finding corroborated the beliefs that many physicians across the country had developed based upon the personal testimonies of their patients.

Despite the potential therapeutic effects of marijuana, the study cautioned that, "Marijuana is not a completely benign substance. It is a powerful drug with a variety of effects. However, except for the harms associated with smoking, the adverse effects of marijuana use are within the range of effects tolerated for other medications."

Joycelyn Elders, former Surgeon General, is a medical marijuana advocate. Elders, in her 2004 op-ed in *The Providence Journal*, rebuts the myth that marijuana is not medicine because one must smoke it by asserting, "Marijuana does not need to be smoked. Some patients prefer to eat it, while those who need the fast action and dose control provided by inhalation can avoid the hazards of smoke through simple devices called vaporizers." In fact, former DEA Chief Administrative Law Judge Francis Young, as is reported in a 1988 Department of Justice report,

has ruled that “Marijuana, in its natural form, is one of the safest therapeutically active substances known...It would be unreasonable, arbitrary and capricious for the DEA to continue to stand between those sufferers and the benefits of this substance.”

Medical professionals remain divided on the issue of medical marijuana. While hundreds of physicians in states with medical marijuana legislation write thousands of prescriptions annually for medical marijuana, other physicians refuse to do so. Organizations that have endorsed medical access to marijuana include: Institute of Medicine, American Academy of Family Physicians; American Public Health Association; American Society of Addiction Medicine; AIDS Action Council; British Medical Association; National Association of Attorneys General; National Association of People with AIDS; National Nurses Society on Addictions; and the New England Journal of Medicine.

Dr. Levaque in Portland, Oregon, feels strongly about the medical potential of marijuana and recommends its use for patients suffering from AIDS, cancer, multiple sclerosis, or glaucoma. His practice came under scrutiny when Oregon officials realized that 690 prescriptions, ¼ of the state’s total, were written by Dr. Levaque. In response, he stated, “I’m proud of the fact that I was taking care of chronic pain patients...Other doctors would literally dump them on me.” By 2001, fewer than 10% of Oregon physicians had ever written prescriptions for medical marijuana. While some doctors question the scientific validity of medical marijuana, others fear the social stigma and/or legal repercussions that may

be attached to medical marijuana. As a result, the task of writing medical marijuana prescriptions is left to self-proclaimed “maverick” doctors. One maverick from California, Dr. Philip Denney, reiterates, “They [the DEA] have scared the hell out of California doctors, and it’s been left to us so-called mavericks.”

The federal government maintains a marijuana growth operation in Mississippi that produces limited quantities of marijuana for government research. Medical marijuana advocates claim that roadblocks to research have been erected by the National Institute on Drug Abuse, whose mission is “to lead the nation in bringing the power of science to bear on drug abuse and addiction,” rendering scientific study nearly impossible. A government study commissioned in the 1980s sought to ascertain the long-term effects of medical marijuana use. The scientific study was terminated in 1992, but seven medical marijuana patients continue to receive government-grown marijuana. The government allocates no funds to research these seven patients. Despite frequent petitions, the federal government refuses to increase the size and scope of the study to include more patients with different afflictions.

PUBLIC OPINION POLLING AND THE HOUSE DEBATE ON MEDICAL MARIJUANA

Repeated polling suggests that public opinion in the United States favors the legalization of medical marijuana. As Table 1 presents, public opinion polls taken between 1995 and 2005 generally report 60 to 80 percent of respondents in favor of allowing medical uses of marijuana. In March of 1999, a Gallup poll reported

that 73 percent of respondents said they “would vote for making marijuana legally available for doctors to prescribe.” In March of 2001, the Pew Research Center conducted a poll that asked whether respondents would support granting physicians the authority “to prescribe marijuana”; 73 percent of respondents replied affirmatively. In October 2002, a CNN/Time poll stated that 80 percent of respondents supported allowing adults to “legally use marijuana for medical purposes.” Recently, a Mason Dixon Polling question, “Do you think adults should be allowed to legally use marijuana for medical purposes if their doctor recommends it” garnered 65 percent support from the respondents.

Statewide opinion has increasingly favored medical marijuana use through ballot initiatives and referenda. Since 1996, 11 U.S. states have passed protective laws for medical marijuana patients; many of these laws provide physicians with prescription power over the medicine. Furthermore, polls have examined the public’s support for medical marijuana after states approved its medical use. For example, according to a Lucas Organization poll in February 2002, 77 percent of Coloradans supported an existing Colorado state law legalizing the medical use of marijuana under a doctor’s supervision.

Representatives who support medical marijuana base their arguments upon (i) strong public support for the medical marijuana; (ii) the importance of compassion in lawmaking with special respect for society’s most grievously ailing members; and (iii) entrusting highly trained physicians with the authority to recommend potentially life-changing medication. To the contrary, dissenting

Representatives emphasize (i) their fear that medical marijuana will be a gateway to the general legalization of marijuana; (ii) the preservation of federal law; and (iii) the preeminence of the FDA when considering the approval of medications. The quotes in Table 2 present some of the most compelling arguments made during the House debate on the Farr-Rohrbacher Amendment. They are drawn from the Congressional Record, July 7, 2004. The quotes highlight the fundamental disagreements between medical marijuana supporters and those fearful of the synergistic effects of marijuana law reform.

In recent years the attitude toward marijuana has liberalized considerably. On November 6, 2012 marijuana was legalized for recreational use both in Colorado and Washington State. For a first-hand account of selling recreational marijuana in an Amsterdam coffee house see Tower (2010).

ANALYSIS OF REPRESENTATIVES' VOTE ON H.AMDT.646

During the 108th Congress, the House of Representatives considered the Farr-Rohrbacher Amendment (H.AMDT.646) to H.R. 4754, a departmental appropriations resolution for the fiscal year ending September 30, 2005. The amendment considered is the following: H.AMDT.646 to H.R. 4754 sought to prohibit the use of funds by federal agencies in the bill to prevent the states of Alaska, Arizona, California, Colorado, Hawaii, Maine, Montana, Nevada, Oregon, Vermont, and Washington from implementing state laws authorizing the use of medical marijuana. The amendment failed by recorded vote: 148 - 268 (Roll No. 334). What factors affected the legislators' decision?

Date	Support	Question	Whose poll
Jun-05	65%	"Do you think adults should be allowed to legally use marijuana for medical purposes if their doctor recommends it, or do you think that marijuana should remain illegal even for medical purposes?"	Mason-Dixon Polling
Nov-04	72%	"Should adults be allowed to legally use marijuana for medical purposes if a physician recommends it?"	ICR Poll
Oct-02	80%	"Do you think adults should be allowed to legally use marijuana for medical purposes if their doctor prescribes it or do you think that marijuana should remain illegal even for medical purposes?"	Harris Interactive for Time Magazine
Jan-02	70%	"Should the use of medical marijuana be allowed?"	Center for Substance Abuse Research, Univ. of Maryland
Mar-01	73%	"Regardless of what you think about the personal non-medical use of marijuana, do you think doctors should or should not be allowed to prescribe marijuana for medical purposes to treat their patients?"	Pew Research Center
Mar-99	73%	"Would you vote for making marijuana legally available for doctors to prescribe in order to reduce pain and suffering?"	Gallup Organization
Mar-98	60%	"Do you support allowing doctors to prescribe marijuana?"	Journal of the American Medical Association
May-97	70%	"Do you think doctors should or should not be allowed to prescribe marijuana for medical purposes to treat their patients?"	Chilton Research for ABC News
Jun-95	79%	"Would it be a good idea to legalize marijuana to relieve pain and for other medical uses if prescribed by a doctor?"	Belden & Russonello on behalf of The American Civil Liberties Union (ACLU)

Table 1 Poll results on legal use of marijuana for medical purposes: June 1995 – June 2005

To answer this question empirically, we adopt the perspective of the political-support approach (Hillman 1982; Grossman and Helpman 1994, and 1996). According to this approach, incumbent politicians make policy choices with the knowledge that their decision may affect their chances for reelection. The legislators attempt to set policies and vote in ways designed to maximize their own welfare, which

is a weighted average of the well-being of their constituency and total contributions they will receive. In this model, the dependent variable is the vote by each Representative on this bill (VOTE), where votes were counted as 1 for aye and 0 for nay, with a yes vote registering a preference for medical marijuana. Due to the limits on the values that the dependent variable may take, logit analysis was used rath-

er than linear regression. The logit analysis makes the probability of a yes vote a function of a vector of constants (β), times a vector of values for the independent variables (x). We use the following logit probability model:

$$\text{Pr ob(Vote} = 1) = \frac{e^{\beta x}}{1 + e^{\beta x}}$$

We model the probability that a Representative votes yes on the bill, as a function of variables in three main categories: campaign contributions; demographics of the congressional district; and Representative's personal characteristics such as gender and ideology. In particular, we focus on contributions received from the manufacturers of (i) pharmaceuticals, (ii) alcohol, and (iii) tobacco; the demographic composition of a Representative's district in terms of (iv) age, (v) poverty, and (vi) urbanization rate; and (vii) gender; and finally different components of a Representative's personal ideology in terms of (viii) party affiliation, (ix) position or ideology on the role of markets versus government, (x) role of federal government in taxing and spending money, and (xi) position on social issues. Next, we briefly explain what proxies we use to capture these eleven independent variables.

PHARMA-MONEY, ALCOHOL-MONEY, and TOBACCO-MONEY: Campaign contributions received from pharmaceutical manufacturers, alcohol, and tobacco industries respectively, during the 2003-2004 election cycle, until June 9th, 2004, in \$1,000. Because legal medical marijuana could eventually become a legitimate competitor with synthesized pharmaceutical drugs (e.g. Marinol, a THC-synthetic), we

collected data on contributions from the pharmaceutical industry. Marijuana growing operations have been cross-breeding strains of marijuana for years in order to develop particularly potent and efficacious medicinal blends of the herb. Such operations often operate as non-profits. Moreover, the patent rights on a plant are, at best, uncertain. Thus, the private, profit-motivated pharmaceutical industry would be disadvantaged by medical marijuana legalization. As a result, we predict a negative effect of campaign contributions received from pharmaceutical manufacturers on a yes vote. Medical marijuana poses no direct threat to the tobacco and alcohol industries; however, if the legalization of medical marijuana increases the likelihood that marijuana would be legalized for all adults, and if marijuana is a credible substitute for tobacco and alcohol, then medical marijuana could have substantial indirect effect upon the tobacco and alcohol industries. Accordingly, we predict a negative effect on a yes vote by campaign contributions to Representatives on behalf of the tobacco and alcohol industries.

AGE65+: Percentage of the congressional district's population who are 65 years or older. POVERTY RATE: Percentage of the congressional district's population who are below poverty line. URBAN RATE: Percentage of the congressional district's population who are living in urban areas. The legal or illegal use of marijuana and also the consumption of alcohol and tobacco are usually perceived to be correlated to these demographics and we expect to see a negative effect of poverty and urban rate, and a positive effect of AGE65+ on a yes vote.

To control for gender, we include a dummy variable, FEMALE, that takes

the value 1 for Representatives who are female and 0 otherwise. We include this variable because of the emerging literature on gender differences in contributions to public goods. Accordingly we expect to see a positive relationship between the gender variable and a yes vote. PARTY: Political party affiliation of a Representative (1 if Republican, 0 otherwise). The ideological views of each party suggest that being a Democrat would increase the probability of a yes vote. There is a wide spectrum in each party regarding the views and ideology of its members due to the two-party-system in the US; therefore, PARTY is a very rough way of capturing the ideology of Representatives. Moreover, we also recognize the possibility that this proxy may conflate ideology and party line. Obviously, within each party, there are differences among Representatives' positions regarding medical marijuana among other issues. Yet, the party may decide, as a party, to have a particular position on the issue. Accordingly, to separate a party's position from individual Representatives' positions, we also include three variables, i.e., INTERVENTIONIST, SOCIAL CONSERVATISM, and FISCAL CONSERVATISM. Griswold (2005) categories Representatives in the 108th Congress based on their position on subsidies either as a free trader, internationalist, interventionist, or isolationist. Members of the interventionist group described as "consistently support government intervention at the expense of the free market—favoring both subsidies and trade barriers." (Griswold 2005, p. 5). Thus, by using a dummy variable, INTERVENTIONIST, that takes the value of 1 for Representatives who are members of the interventionist group, we expect to capture the effects of a Representative's ideology regarding the role of markets on the

vote. In particular we predict a negative effect of this ideology variable on a yes vote. The personal ideology or position of a Representative on social issues, the eagerness to impose federal restrictions on personal behavior is the second ideology indicator we use. We utilize American Conservative Union's (ACU's) Congressional ratings. Each Representative is rated on a scale of 0 to 100, the higher the rating the more conservative a Representative is on social and cultural issues. We expect a negative relationship between a Representative's ACU rating and a yes vote on the amendment. Finally, we use a third ideology indicator to capture a Representative's position on taxing and spending by federal government: FISCAL CONSERVATISM. In doing so, we utilize National Taxpayer Union (NTU) Rates. The taxpayer score measures the strength of support for reducing spending and opposing higher taxes, and it can range between 0 and 100. A higher score means a Representative voted to spend less money. We expect a positive relationship between a Representative's NTU rating and her yes vote on the amendment.

In addition to these eleven variables, we take into account one last variable: We expect Representatives from states that have legalized medical marijuana to vote in favor of the amendment. Thus we introduce a variable, LEGAL MEDICAL MARIJUANA STATE, (1 if marijuana is legal; 0 otherwise), and we expect its estimated coefficient to be positive. The last three columns in Table 3 provide the summary statistics—minimum, average, and maximum values—for these twelve variables.

In the estimations, we first deal with the potential statistical endogeneity of campaign contributions. We uti-

lize two sets of instrumental variables (IVs) to capture the “degree of electoral competition” ((i) money spent per vote in the most recent election and (ii) cash on hand at the end of the previous election cycle); and the “power” of a Representative ((iii) party leader, (iv) committee chair, member on (v) the Ways and Means Committee, and on (vi) the Energy and Commerce Committee.)

Table 3 presents the Maximum Likelihood estimation results for the logit model. According to these reported estimation results, a Representative from a medical marijuana state was 36.3% more likely to support medical marijuana. Other than this anticipated result, the estimations reveal three surprising findings. First, the votes were solely determined by the personal characteristics of a Representative; contributions, district characteristics, and party affiliation were not significant factors. Second, both gender and ideology factors were working as expected and they were statistically significant: The marginal effect of gender was estimated as (+) 22.5%. It appears that female Representatives were more sympathetic towards medical marijuana use. Social conservatives

were in favor of using federal funds to prevent the states from implementing laws allowing medical marijuana use. Perhaps, social conservatives were indeed worried about medical marijuana use as a first step towards legalizing marijuana and other similar substances. The marginal effect of social conservatism is calculated as (-) 2.6%. Interventionists (with no faith in the markets and therefore very supportive of federal level regulations and control in general) also voted for the appropriation of the funds to enforce federal law regarding marijuana use. The marginal effect of being an interventionist is calculated as (-) 19.1%. Finally, fiscal conservatives did not support extra spending by the federal government regardless of the nature of these spending. Marginal effect of fiscal conservatism is calculated as (+) 2.9%.

Figure 1 shows how social conservatism, i.e., ACU rating of a Representative affects a yes vote. For instance, for an “Average-Fiscal Ideology-Representative” the probability of a yes vote decreases when the social conservatism rating increases. For instance, a Representative with an ACU rating of 40 has a 95% probability of voting yes,

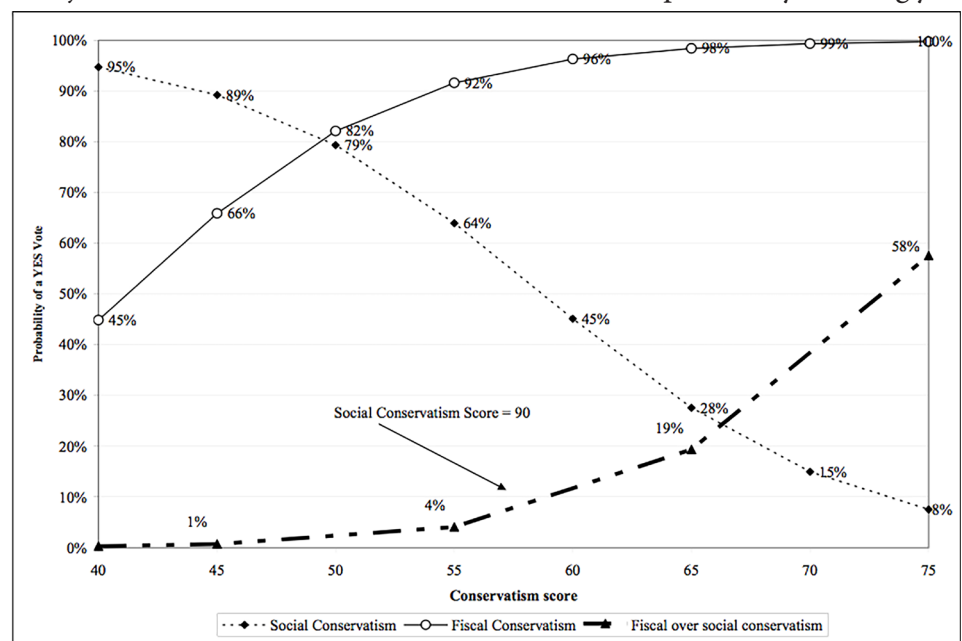


Figure 1 : How does social and fiscal conservatism play a role in Representative's vote on the H.AMD.646?

and for the same Representative, an ACU rating of 58.5 has a 50% probability of voting yes or no. Accordingly, once this Representative's ACU score slightly passes the average ACU rating of 54, he votes for the appropriation of federal money not to allow medical marijuana use. Similarly, Figure 1 also shows how the NTU rating of a Representative plays a role. In particular, for an "Average-Social Ideology-Representative," the probability of a yes vote increases when his fiscal conservatism rating increases. For instance, a Representative (with a rating of 40) will vote to appropriate the funds. Once the rating is 41.25 or above, then he votes yes to prohibit the use of funds in the bill to prevent the states from implementing state laws authorizing the use of medical marijuana. It is interesting to note that even a slightly below average fiscal conservatism rating trumps an average social conservatism score. This observation made us to look into social conservatives' votes more carefully.

There were nine Representatives with an ACU rating of 90 or greater who supported medical marijuana use. In other words, these highly socially conservative Representatives did not vote to prohibit the use of funds in the bill to prevent the states from implementing state laws authorizing the use of medical marijuana. This observation leads us to believe that perhaps there was a battle among different aspects of a Representative's ideology, in particular between his fiscal and social conservatism. In Figure 1, to make this observation clear, we derive the probability of a yes vote for an "Extreme-Social Ideology-Representative." The only difference between this Representative and the previous ones is his ACU rating of 90 (instead of average 54). According to our model, as long as his fiscal conservatism rating

is below 73.5, he votes against medical marijuana use. After that point, even if he is socially conservative, he votes to prohibit the use of federal funds.

CONCLUDING REMARKS

It is unusual to find out that both campaign contributions and district's demographics play insignificant roles in a legislator's decision. Yet, more than this rare finding, it is most intriguing to see how different aspects of Representatives' ideologies played a role in casting their vote on the amendment, H.AMDT.646 to H.R. 4754, to prohibit the use of funds in the bill to prevent the states from implementing state laws authorizing the use of medical marijuana. This was clearly a multidimensional issue. It was not just a vote to allow medical marijuana use—a social concern, or approving additional funding for federal government—a fiscal concern. This multidimensional character of the issue in hand probably resulted in a personal battle between social and fiscal conservatism within Representatives. For this particular

vote, fiscal conservatism did override a representative's social conservatism. Slightly below average fiscal conservatism won out over average social conservatism. Moreover, an extreme social conservatism was trumped by an above average fiscal conservatism.

In the light of these findings, it might be worthwhile to examine other decisions or votes by legislators on issues with more than one dimension. Such analysis may reveal interesting patterns. It may show how different aspects of Representatives' ideologies affect their decision making. If it turns out that the nature of the issue determines which component of the ideology overrides the others, in other words the same Representative with the same ideology matrix votes differently depending on the nature of an issue, perhaps we will need to revisit the assumption that legislators' ideology is fixed over time (Levitt 1996).

Table 3 Logit model maximum likelihood estimation results

(Dependent Variable: Vote on H.AMDT.646 to H.R. 4754 = 1 if YES to prohibit the use of funds in the bill to prevent the states from implementing state laws authorizing the use of medical marijuana, or 0 otherwise)

Explanatory Variables	Coefficient	Std. Error	t-ratio	P-value	Minimum	Average	Maximum
Constant	-0.452	1.441	-0.314	0.754			
PHARMA-MONEY	0.021	0.060	0.357	0.721	\$0	\$7,221	\$174,552
TOBACCO-MONEY	0.038	0.133	0.287	0.774	\$0	\$1,559	\$133,100
ALCOHOL-MONEY	-0.152	0.167	-0.909	0.363	\$0	\$4,951	\$118,500
AGE 65+	2.034	6.322	0.322	0.748	5%	12%	30%
POVERTY RATE	-0.507	3.190	-0.159	0.874	0%	12%	42%
URBAN RATE	-0.776	0.807	-0.961	0.337	21%	79%	100%
LEGAL MEDICAL MARIJUANA STATE	1.759	0.465	3.787	0.000	0	21%	1
REPUBLICAN	0.290	1.131	0.257	0.797	0	53%	1
FEMALE	1.108	0.559	1.982	0.047	0	14%	1
INTERVENTIONIST	-2.074	1.002	-2.070	0.038	0	4%	1
SOCIAL CONSERVATISM	-0.154	0.019	-8.307	0.000	2	54	100
FISCAL CONSERVATISM	0.173	0.032	5.388	0.000	16	45	90

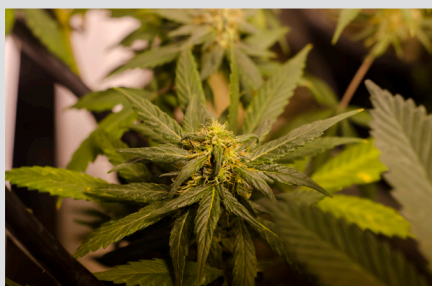
Frequencies of actual and predicted outcomes:

		Predicted				
		Vote=No	Vote=Yes	Percentage Correct		
Observed	Vote=No	247	19	92.86%		
	Vote=Yes	21	127	85.81%		
Overall Percentage Correct				90.34%		
Log Likelihood = -112.809; $\chi^2 = 314.205$; Pseudo R ² = 0.582						

Note: contributions are in \$1,000; age65+, poverty rate, and urban rate are in percentages; Republican, Female, and Interventionist are either 0 or 1.

Table 2 Top 10 quotes from the debate in the Congressional Record, July 7, 2004

1. This amendment does not stop law enforcement officials from prosecuting illegal use of marijuana. This amendment does not encourage the use of marijuana. This amendment does not encourage the use of drugs in children. This amendment does not legalize any drugs. This amendment does not change the classification of marijuana. This amendment is recognized as States' rights to oversee the medical scope of practice of doctors in their States, to prescribe drugs as doctors see as necessary for medical conditions.	(Mr. FARR, California)
2. Another objection raised by opponents of this amendment is that passing it would send the wrong message to children. It would make children think that marijuana is not dangerous. Let me tell you something. Children know how dangerous marijuana is already. Allowing seriously ill patients to use it will not change that. And associating the use of marijuana with AIDS and chemotherapy is not likely to increase its appeal. On the other hand, if you deny cancer, AIDS, and MS patients the opportunity to use this drug to alleviate their pain--while permitting the medical use of powerful addictive drugs like vicodin and oxycontin--the only message you are sending to children is that you are intellectually dishonest and completely lacking in compassion.	(Mr. FARR, California)
3. But if you do have compassion and care for patients, they ought to have a freedom of choice. I think that is what this is all about, freedom of choice.	(Mr. PAUL, Texas)
4. If Congress respects States' rights in so many other areas, why does it not respect it with regard to medical marijuana?	(Mr. FARR, California)
5. Do opponents of this amendment honestly believe the American Nurses Association, the New York State Medical Society, United Methodist Church, the Episcopal Church, and others are supporting this issue because they hope to legalize marijuana for all purposes? Of course that isn't the reason. These organizations support legal access to marijuana for medical purposes because they know one simple fact: it helps sick people.	(Mr. FARR, California)
6. Mr. Chairman, I rise in support of this amendment because my mother had glaucoma and we bought her marijuana because it was a relief, and that was before this bill was passed in the State of California.	(Ms. WOOLSEY, California)
7. But, all of a sudden, when it comes to so-called 'medical marijuana,' the FDA is no longer competent. But I do want to enter into the RECORD that the FDA, in fact, did look at marijuana as a medical substance and found absolutely no value whatsoever to its use.	(Mr. OSE, California)
8. Mr. Chairman, first, do not let any Member kid themselves; if you cannot enforce a Federal law, you do not have a Federal law. This would eliminate our ability to enforce marijuana laws in States that have passed this.	(Mr. SOUDER, Indiana)
9. As a conservative, I am increasingly troubled by the federalization of criminal law that has occurred in recent years. It seems that more and more crimes are being declared to be Federal crimes. While sometimes this is appropriate, for example in immigration law, which is a federally mandated issue by our Constitution, but criminal justice constitutionally is the domain of the State and local government.	(Mr. ROHRBACHER, California)
10. We fought a Civil War over nullification. States do not have the right. If we can have States nullify an existing Federal law, then on what grounds can this not happen under the same precedent, a lack of enforcement on environmental laws, of civil rights laws, of the Americans with Disabilities Act, of any law? Because once a State can nullify a Federal law by saying, We cannot enforce it, you do not have a Federal system.	(Mr. SOUDER, Indiana)



YOUNG MONEY, MORE PROBLEMS

KEVIN ROOSE EXAMINES THE TWENTY-SOMETHINGS WHO WILLINGLY RIDE WALL STREET'S HEDONIC TREADMILL

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“The bosses who do lines of coke off a stripper’s ass don’t exist anymore”

— Kevin Roose (60)

AT LEAST, THAT’S HOW ONE investment banker explains the post-2008 climate on Wall Street to author Kevin Roose in *Young Money: Inside the Hidden World of Wall Street’s Post-Crash Recruits*. Published in 2014 after three years of hands-on research, Roose’s book delves into the lives of eight recent graduates who embark upon seemingly glamorous fresh-out-of-college-straight-onto-Wall-Street tracks. Yet, as the author reveals, the daily challenges faced by these entry-level analysts are a far cry from the prestigious careers once promised them by amiable on-campus recruiters from the nation’s big banks. While coke and strippers may no longer have a notable place in today’s financial sector, it seems that Ad-derall, Modafinil, ethically questionable business practices, and

overburdened PHDs (poor, hungry, and driven workers) certainly do.

On the surface, Roose takes great pains to cover all the appropriate socioeconomic bases in his profile of entry-level analysts. He chronicles the careers of four Caucasians (three males and one female), one Indian-American, one (female) Asian-American, one black American of Haitian descent, and one Hispanic. Perhaps unsurprisingly, Roose develops close friendships with some of his subjects over the course of his three-year observation—particularly the white males—and their stories are thus featured more predominately than the others. This is unfortunate, as *Young Money* could benefit from a little less bromance and a little more emphasis on the issues sur-

rounding sexism and racism in the workplace, which the author chooses to merely half-heartedly tiptoe around.

This is not to say that the book lacks depth. On the contrary, *Young Money* is a valuable exposé and sociological inquiry—one that shines some much-needed light onto the shady inner-workings of America’s biggest banks. Chapters covering the daily lives of the eight rookies are interspersed with Roose’s extensive personal interviews and undercover appearances at Ivy League career fairs, thus allowing the author to reveal the extent of the “moral vacuum” that has engulfed so many of the country’s best and brightest students.

Haunted by student loan debt and captivated by \$70,000 starting sal-

aries, these recent alums routinely pull 100-hour work weeks, cut ties with friends and family, and are consistently run ragged by tyrannical bosses who keep them “on call” 24 hours a day. (It is quite telling that Goldman Sachs’ 200 West Street headquarters is unlovingly referred to as “Azkaban” by its own employees.) As Roose explains, many of the United States’ most promising Humanities majors have chosen to forgo careers as doctors and artists only to slave away as “Excel grunts,” pumping out meaningless hundred-page pitch spreadsheets in the bowels of a big bank.

The most striking passages of the book are undoubtedly those that explore the moral implications of the analysts’ work. The author’s interviews reveal that many young people employed in finance are so sleep-deprived that they have no time to question whether or not their work is ethically suspect. As one Goldman analyst admits, “There’s an inherent conflict between ethical business issues and fiduciary duty. As a person working for a public company, your duty is making money for your shareholders, but what if that means doing wrong?” (81) Other workers interviewed by the author were not so clairvoyant. When asked about their company’s moral and ethical issues, the responses range from, “I don’t know, I never really think about it,” to “I’m just trying not to fuck up” (80). Apparently, in a world where the big picture means everything, most entry-level analysts are so exhausted that they are only able to focus on their day-to-day priorities, and—

in the author’s words—earning “a year-end bonus number that won’t make them want to jump in front of the 4 train” (37).

To his credit, Roose doesn’t pull any punches when it comes to addressing the lovability of graduates who find themselves in this position. After all, “They aren’t victims, they chose this path voluntarily,” he readily notes (35). The various horror stories presented throughout *Young Money* will nevertheless incline readers to view these analysts as brainwashed whipping boys (and girls), and it serves as a convincing cautionary tale for those who are currently on fence about heading to Wall Street. Although the book is far from a game changer, Roose does a fantastic job of putting the life of an investment banker into layman’s terms, and rightfully lambasts Wall Street’s monopoly on the country’s cleverest young people. If college career advisors truly care about the future well-being of students, they

would do well to hand this book to every finance-minded upper-classman who walks through their doors. When it comes down to it, *Young Money* is a two-day read that could help prevent a lifetime’s worth of misery.

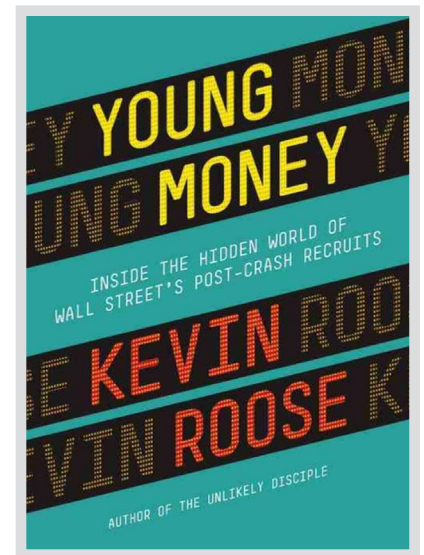


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THE EFFECT OF DROPPING LOWEST TEST SCORES ON LEARNING AND PERFORMANCE

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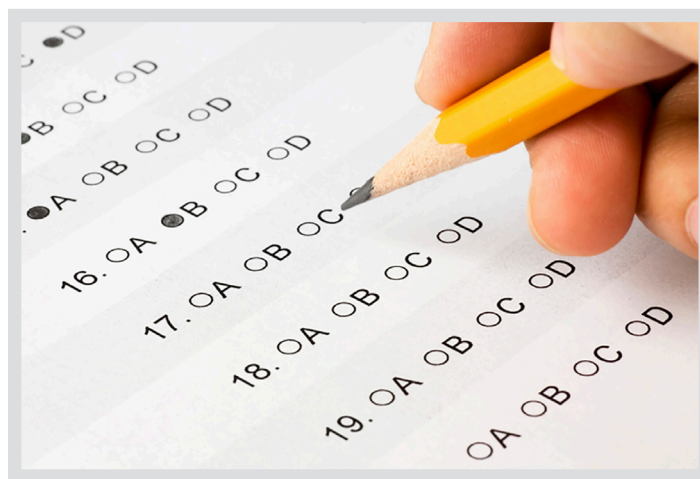


photo by Alberto G. via Flickr

IDEALLY, IN ORDER TO HAVE A FAIR measure of their abilities, students should be graded using similar standards for all classes in the same field. This then allows one to reasonably compare a student with an A in English literature to another with the same grade in the same subject taught by a different teacher. The problem, however, is that there is no standard grading practice among instructors because each teacher has her own teaching style and grading policy that she believes to be the most effective. For example, there are instructors who allow students to drop their lowest test score and only count their highest ones towards their final course grade. Possible reasoning behind utilizing this particular policy could be recognition of the fact that students may not always perform at their best every single day - sometimes

struggling with personal issues or a work overload in another class may adversely affect a student's test performance in a particular class. Thus, some professors may deem it unfair to judge their students' capabilities on one poor performance and erase their lowest scores from the records.

While doing this is likely to be seen as a beneficial practice by both instructors and students, the actual effect of this policy is unclear. If there is no difference between the effort students put forth when one of their scores is dropped versus when all of their scores are counted towards their final course grade, one would not expect any negative consequences to arise from the dropping the lowest score. However, it is possible that students recognize that they could conceivably perform normally (i.e., as they would have if

all of the scores counted) on all but one of the tests and perform poorly on one exam without hurting their final grade. In this case, there is a case of moral hazard where teachers expect students to put forth a normal level of effort on all of the exams while providing insurance against students' poor studying for one exam.

The idea that students would take advantage of grading policies is not entirely unfounded. In fact, Krohn and O'Connor (2005) found that students who get high exam scores put less time into studying for their next exam (15). They suggested that this might be because the marginal utility of leisure becomes relatively higher than the marginal utility of studying (25) by that point. Another study by Elikai and Schuhmann (2010) proved that students who

needed a 93 or better to earn an A in a course received higher exam scores than students who only needed a 90 or better to earn an A. This implies that students perform worse under more lenient grading scales (685). Therefore, it would not be surprising if students who only need to score well on the majority of their exams receive lower final course grades than students who need to score well on all of their exams.

On the other hand, one could argue that students in classes where the lowest score is dropped would receive the same (if not higher) final grades as students in classes where all of their grades are counted. If a student knows that one of her grades will be dropped, she may exert extra effort into studying for her tests so that she can increase her chances of receiving high grades on the tests she does not want to drop. In that case, her final grade would be no less than what it would have been in a class where all of her test scores counted. Therefore, with arguments for why final course grades may be lower or may be higher, the exact effect of dropping students' lowest grades is ambiguous.

In the past, other researchers have questioned the effects of manipulating grades through different grading methods. For example, Patron and Smith (2011) examined the effect of a grading policy where students were allowed to retake quizzes up to three times and the highest score (of the possible three tries) was recorded as the final quiz score. This was compared to a grading policy where each try was averaged and recorded as their final quiz score (4-5). Patron and Smith found that when students' final quiz score was the average of all tries, they put forth

more effort and got higher scores in their first attempt on the quiz than their peers under the grading policy where only the highest score counted (8; 10).

While there are similarities between Patron and Smith's research and the research attempted in this study, this study looks beyond examining the difference in effort exerted by students under two different grading policies. The main objective of this study is to help teachers who are uncertain about how to select a grading policy find the policy that best suits their needs. For instance, assume most teachers' main goal is to maximize their students' knowledge, and they use the average of all test scores, which will now be called cumulative grade average (CGA), as a proxy to measure how much their pupils have learned. Without knowing the effect of their grading policy, these teachers cannot know if their grading method is encouraging their students to study for tests or if it has the opposite effect. There may also be teachers who are more concerned about assuring that their students earn the highest final grades as possible and are equally as unclear about how to accomplish this. For this reason, the primary purpose of this experiment was to determine what grading policy maximized the students' CGAs and their final course grade.

In this study, the two grading policies examined were the dropped score grading policy in which teachers calculated students' final grades by taking the average of all but the lowest test score, and the traditional grading policy in which teachers calculated students' final grades by taking the average of all test scores. To determine whether students un-

der the dropped score grading policy performed any differently than if all of their scores counted towards their final course score, I conducted an experiment in a controlled environment. First, I studied the relationship between past performance on exams and future performance. Specifically, if students received high scores on their first two exams, I investigated whether there was a positive or negative correlation with the scores they received on the third test. Second, I studied the difference between each individual test score of students under the dropped score grading policy as compared to those of students under the traditional grading policy. Finally, I compared both grading policies to decide which strategy, on average, generated the highest final grades and CGAs.

EXPERIMENTAL DESIGN

Subjects

A total of fifty-three students from a private, Midwestern university voluntarily participated in this experiment. Twenty-four of the participants were female, and twenty-nine were male. The subjects were told that they would be paid a \$5 show-up fee in addition to the amount of money they earned based on their performance in the experiment.

The Task

The experiment was divided into three sections and concluded with a survey asking for demographic information. In each of the three sections, subjects were presented with forty math problems and asked to solve as many math problems as they wished in five minutes. The math problems required subjects to add together five randomly generated two-digit numbers with only the

aid of scratch paper. Subjects then were told how many problems they solved correctly at the end of each task. For each math problem they solved correctly, they earned one point. Incorrect or unsolved math problems were worth zero points.

This task came directly from Niederle and Vesterlund (2007) who used it to test whether women preferred competitive environments less than men. They chose this task because it “require[d] both skill and effort” and was not biased against males or females (1074). Similarly, this task was chosen because it required some effort (in terms of time) but was also a task that college students should be more than capable of completing without much difficulty, regardless of the math courses they took in college.

Subjects were assigned to one of two groups, the control group or the dropped score group. Depending on which group the subject belonged to, her grades were calculated using her test one score (t1), test two score (t2), and test three score (t3) in a different manner. Regardless of which group they were members of, subjects earned \$0.25 for each point they earned in their final score. Subjects received their payment at the end of the experiment.

Treatment 1: Control Group

The equation for the final grade of students in the control group (TC) was as follows:

$$T_C = \frac{t_1 + t_2 + t_3}{3}$$

Treatment 2: Dropped Score Group

The equation for the final grade of students in the dropped score group

(TD) was as follows:

$$T_D = \frac{t_1 + t_2 + t_3 - \min\{t_1, t_2, t_3\}}{2}$$

Demographics

After subjects completed the four tasks, they were asked to provide some demographic information. I asked them to indicate their birth year, gender, race, ethnicity, year in school (first, second, third, fourth, fifth or greater, graduate student, or not in college), estimated cumulative GPA, primary major, primary minor, and secondary major or minor. They also indicated whether or not they had taken any classes that frequently used mathematics since the spring semester (Spring 2013). This information was gathered in an attempt to control for certain characteristics that some subjects had that may have affected their test scores and is summarized in Table 1.

Table 1
Demographic characteristics

Gender	
Male	55 %
Female	45 %
Race	
White	45 %
Asian	51 %
Other	4 %
Year in School	
Freshmen	25 %
Sophomore	40 %
Junior	17 %
Senior	17 %
Other	1 %
Primary Major	
Economics	19 %
Mathematics	17 %
Other	64 %
Taken a math course recently	
	81 %

DATA ANALYSIS

In order to determine whether or not past performance had an effect on future performance, I ran the following regression:

$$t_3 = \beta_0 + \beta_1 t_1 + \beta_2 t_2 + \beta_3 D + \beta_4 D * t_1 + \beta_5 D * t_2 + \nu$$

where D is a dummy variable that equals one if the participant was in the dropped score group, and V represents control variables (e.g., gender). β_1 measured the effect that test one scores had on test three scores from subjects in the control group only. To capture the effect that the first test score had on test three scores for subjects in the dropped score group (net of the general effect test one had

on test three scores, as captured in β_1), I looked at the coefficient of the interaction term between D and t1, β_4 . Similarly, β_2 is the measurement of the effect of test two scores on test three scores for subjects in the control group. β_5 then is the additional effect of test two scores on test three scores when subjects were part of the dropped score group. Finally β_3 entails the effect of any other variables, unique to the dropped score group, had on test three scores.

$$\text{Hypothesis 1: } \beta_1 = \beta_2 = 0$$

Subjects in the control group did not have the luxury of dropping their lowest score, so they knew that each test contributed to one-third of their final grade. With that knowledge, subjects should have put forth an equal level of effort into each of their tests. Assuming that test scores for subjects in the control group were completely independent from each other, I expected both β_1 and β_2 to equal zero and reflect that t1 and t2 had no influence on t3.

Hypothesis 2: $\beta_4 < 0$ and $\beta_5 < 0$

I expected that if subjects in the treatment group performed well in one or both of the previous tests, they would be less inclined to put forth equal amounts of effort on their final test. For example, there could be a subject who received a very low test one score. Before knowing her test one score, she believed that each test had a thirty-three percent chance of counting towards her final grade. After taking the first test, she now knows that the last two tests will be the sole contributors to her final grade. Consequently, she must exert higher levels of effort in the last two tests. Therefore, there should be a negative correlation between test one scores and test three scores for subjects in the treatment group.

To determine whether or not dropping subjects' lowest score affected subject's individual test grades, CGAs, or final grades, I used Fisher's exact test since the sample size was too small to get statistically significant values through simple regressions.

RESULTS

Without controlling for any other variables, test one scores and test two scores had a positive, statistically significant effect on test three scores for subjects in the control group ($p=0.001$ and $p=0.000$, respectively). This went against the hypothesis that previous test scores would not affect test three scores for subjects in the control group. From this regression, it appears as if students earn higher test three scores for every point they earn on their first and second test. There was also a positive correlation with test three scores and the interaction term,

$D*t_2$, which was the exact opposite of the second hypothesis ($p=0.069$). This means that being in the treatment group increased subjects' test three scores for each point earned on the second test. The opposite is true for test one scores. An increase in test one scores had a negative effect for subjects in the treatment group ($p=0.054$), as expected.

When control variables were added, the above results changed slightly. For example, the second regression in Table 2 shows the regression results when the control variables were subjects' recent enrollment in any courses involving mathematics, year in school, and gender. When these variables were added to the regression, test two scores failed to significantly influence test three scores for subjects in the control group ($p=0.414$). Otherwise, there were no other significant differences. Like before, an increase in test one scores led to an increase in test three scores for subjects in the control group ($p=0.026$). By being in

the treatment group, subjects had an added negative effect on test three scores for every increase in test one scores ($p=0.030$). They also had an added positive effect for every increase in test one scores ($p=0.051$). Similar results were found when subjects' cumulative GPA was added as an additional control variable. Table 2 summarizes these findings.

Table 2

Regression with test three scores as dependent variable. The dummy variable "math" is 1 if the participant has not recently taken a class that involved math. The variable "schyr" represents how many years (1-5) the participant has been an undergraduate student or indicates that the participant is a graduate student (6). The variable "gpa" represents the subject's cumulative GPA (for undergraduate students are at least sophomores).

	Test Three Score		
	(1)	(2)	(3)
t_1	0.571*** (0.169)	0.581** (0.240)	0.775** (0.334)
t_2	0.588*** (0.141)	0.296 (0.354)	-0.060 (0.539)
D	1.87 (2.215)	-1.243 (6.173)	-4.256 (8.354)
$D*t_1$	-0.556* (0.281)	-1.446** (0.614)	-1.406** (0.679)
$D*t_2$	0.486* (0.262)	1.512* (0.722)	1.7* (0.856)
<i>math</i>		-0.656 (1.620)	-1.447 (1.951)
<i>schyr</i>		0.862 (0.587)	-0.509 (0.862)
<i>gender</i>		-0.542 (1.12)	-0.652 (1.302)
<i>gpa</i>			-0.392 (1.743)
<i>constant</i>	2.811	3.538 4.899	8.974 8.340

Standard errors in parentheses.
*** $p<0.01$. ** $p<0.05$. * $p<0.1$

Looking at each test score individually, dropping participants' lowest test scores had no statistically significant effect on test one, test two, or test three scores ($p=0.585$, $p=0.427$, and $p=0.249$, respectively). However, of the thirty participants in the control group, the average final grade for the control group was 13.5 whereas the average was 15.261 for the members of the treatment group. According to Fisher's exact test, this difference was statistically significant ($p=0.000$). The same cannot be said for the CGA. The control group had an average CGA of 13.50 whereas the average CGA for the treatment group was 13.826. The difference between the two groups and their CGAs was statistically insignificant ($p=0.564$). See Table 3.

DISCUSSION & CONCLUSION

It can be difficult to get into the minds of students and truly understand why they behave the way they do; without this insight, teachers can only guess as to the best strategy to evaluate their students' work and effort. This experiment documented the effect of two different grading policies: the traditional method of counting all of the test scores towards

students' final course grades, and an alternative method of dropping students' lowest scores from final grade calculations. Oddly enough there was no statistically significant difference between test scores of subjects in the treatment and control group when each of the three tests was compared individually. Additionally, the difference between cumulative grade averages of subjects in the treatment and control group were statistically insignificant. Thus, the dropped score grading scheme was no better or worse than the traditional method in terms of students' cumulative grade averages. If the students' cumulative grade average is a proxy for how much students learn, this implies that students under the dropped score grading policy perform just as well as students under the traditional policy. On the other hand, it was determined that the traditional method was indeed worse than the dropped score method in terms of students' final course grades. Final grades for subjects under the dropped score policy were significantly higher than the final grades of their peers in the control group.

In addition to looking at how test scores were influenced by the grading policy, this experiment

also investigated how test one and test two scores influenced test three scores. The results suggested that students under the traditional grading policy increased their test three scores when they performed well on their first test. Without including any control variables, these students also saw a rise in their test three scores with an increase in their test two scores. This broke the assumption that previous test scores were independent of future test scores, which indicated that students changed their behavior based upon their past performance.

This was even true for subjects in the dropped score group, who had a significantly negative relationship between the interaction term between D and t1 and test three scores as well as a statistically positive relationship between the interaction term between D and t2 and test three scores. Under the alternative grading method, an increase in test one scores actually had an added detrimental effect while an increase in test two scores was beneficial. This last finding was unexpected. One possible explanation is that when subjects found out their test two scores, they were able to calculate the final grade they would earn if

Table 3
Summary statistics for individual test scores, CGAs, and final grades

	Control Group					Dropped Score Group				
	t_1	t_2	t_3	Final Grade	CGA	t_1	t_2	t_3	Final Grade	CGA
Min.	7	4	6	6.333	6.333	4	5	5	5.5	5
Mean	12.667	13.367	14.467	13.5	13.5	13.391	13.174	14.913	15.261	13.826
Max.	21	21	24	21.667	21.667	30	32	35	33.5	32.333
Std. Dev.	3.536	4.238	4.614	3.809	3.809	5.237	5.348	6.360	6.12	5.419

they performed poorly in the next test. Dissatisfied with that potential final grade or convinced that they could do better, they put forth more effort into their last test score as a last attempt to increase their final grade.

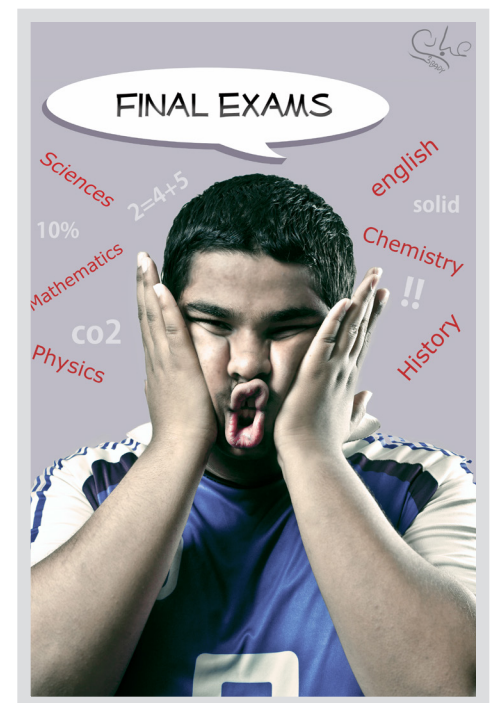
Based on all of these results, there is enough evidence to suggest that teachers would benefit from adopting a dropped score policy, regardless of whether they wish for their students to maximize learning or final course grades. Students learn just as much under the dropped score policy as under the traditional policy, so teachers do not have to fear that students would leave the class less knowledgeable than their peers. Furthermore, students who are allowed to drop their lowest score will also end up with higher final course grades, which will make their cumulative GPAs higher than their peers (*ceteris paribus*). This will make them more competitive when applying to schools or entering the job market. Teachers may also gain from such a grading policy in other ways. If students feel like the dropped score policy is more lenient and an act of kindness from their instructor, this could arguably affect their attitude towards the teacher and the class in a positive manner. This genial attitude towards the class could then lead to favorable course and instructor evaluations. As a result, there are several compelling reasons why a teacher might choose to drop students' lowest test scores. Even if instructors do not feel comfortable excluding a test score from their final grade calculations, they might consider dropping students'

lowest homework grade, which should have similar effects. The point is that students are no worse off – and indeed better off in terms of final course grades – under the dropped score policy than in the traditional grading policy.

To strengthen the results of this experiment, future researchers should also consider asking subjects about their perception of their scores. If subjects expected to receive a high test score but earned a lower test score, one might expect them to exert more effort during the upcoming test. In the present study, there was no clear way to judge whether or not subjects were pleased with their test scores. One way to see if subjects' perceived test score matches their actual test score would be to ask subjects how many questions they think they answered correctly before revealing their test score. After their test score has been disclosed, subjects would be asked the same question again before starting the next test. Then a comparison between the number they enter prior to the test and the number they accurately answer will help better determine the effect past performance has on future performance. Alternatively, future researchers could add an unpaid practice section before test one. Subjects would then be told how many questions they answered correctly, which would give them a reference point for their expected performance during the paid portion of the experiment.

Further research could also be done to explore multiple grading schemes. This study only examines two, but a follow-up study

could try to find any other alternative grading policies that increase student's final grades and/or CGAs. Researchers could look at how students' behavior changes if their final grade is composed of their maximum score only, minimum score only, the average of the lowest two scores, or a linear combination of all three test scores with different weights on each score. The findings of such studies would give instructors even more options when they are in the process of deciding how they wish to grade their students and help them make better-informed decisions.



HOW CAN THE EUROZONE SMOOTHEN TEMPORARY ASYMMETRIC SHOCKS?

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“Given the loss of the devaluation instrument, other ways to provide short-term relief need to be devised. If not, the Community economic system could come under increasing strains, as Member States hit by exogenous disturbances would show very serious difficulties in reattaining internal balance”

— European Commission (1993)

THE NEED FOR MACROECONOMIC stabilizers in a currency union has been detected long before the “the mother of all asymmetric shocks” (Krugman, 2012) hit the Eurozone in 2008. Starting with Mundell (1961), a myriad of economists have described the need for adequate adjustment mechanisms to replace floating exchange rates and country-specific monetary policies. They identified factor mobility, wage flexibility and fiscal transfers as the most crucial shock absorbers. While the European commission provided the platform for such debate (e.g. 1977, 1993), it failed to incorporate Mundellian arguments into its institutional blueprint (Kotz, 2012). Instead, European policymakers adhered to the belief that the Stability and Growth pact would enable euro member states to cushion shocks independently.

The euro crisis has proven them wrong. The dyad of unsustainable debt levels and tension on international financial markets has forced many countries into procyclical fiscal stances. Other adjustment mechanisms provided little relief. This paper thus discusses the effectiveness of adjustment mechanisms in the euro area. Following the European Commission (1993), the paper assesses them along three dimensions: (i) significance of impact, (ii) timing and (iii) temporary character. An analysis of the current effectiveness of the respective mechanisms reveals which adjustment mechanisms are worth intensifying for EMU.

2. OCA THEORY

The degree to which currency unions can cushion asymmetric

shocks is a crucial determinant of its sustainability. Robert Mundell (1961) was the first economist to describe adjustment mechanisms in the framework of a currency union. His essay on optimum currency areas laid the foundation for an entire stream of research on optimum currency areas. Mundell’s core finding remains unchallenged today:

A currency area is optimum when its members are mainly subject to symmetric shocks and preside over effective adjustment mechanisms to cushion asymmetric shocks.

The theory part of this paper is structured alongside this definition. First, it provides a more narrow definition of shocks and explores the degree to which asymmetric shocks affect EMU (2.1). A general example next illustrates the basic

dilemma of OCA theory (2.2). It discusses the effects of asymmetric shocks for countries with floating exchange rates (2.3.1) and for countries in a monetary union (2.3.2). The findings call for a closer look at the adjustment mechanisms in EMU, which is provided in chapter 3.

2.1 ASYMMETRY OF SHOCKS IN EMU

2.1.1 TYPES OF MACROECONOMIC SHOCKS

Macroeconomic shocks are swift and substantial changes in the demand or supply of goods that are not anticipated by market participants (Forni & Gabetti, 2010). They usually have a significant impact on economic parameters such as inflation, output gaps, and employment. Depending on the source of the shock and the influenced parameters, several different types of shocks can be identified.

A main distinction is made between supply and demand shocks. Supply shocks (e.g. oil price shocks) or demand shocks (e.g. changes in consumer preferences) can affect countries differently, for instance when shocks are sector-specific. While supply shocks tend to have a lasting impact on GDP, demand shocks are often less persistent (Forni & Gabetti, 2010, p.3; Bayoumi & Eichengreen, 1994, p. 814f.).

2.1.2 DETERMINANTS OF EFFECTIVE SHOCK ABSORPTION

Even though many of these shocks are not persistent, they can have a detrimental impact on the economy. Macroeconomic stabilization contributes to a more efficient resource allocation in two ways (Maravalle, Montoya, & Pelkmans, 2008):

(i) Absorption of shocks without an increase in the volatility of economic aggregates (out-

put, unemployment, inflation)

(ii) Return to the long-term growth path at relatively high speed
Macroeconomic stabilization can also play a useful role in the adjustment process to a permanent shock (European Commission, 1993, p. 43). Ultimately, however, the only effective adjustment for permanent shocks is a change in relative prices or a move of factors. The channels for this adjustment, however, go beyond macroeconomic stabilization. For this reason, this paper focuses solely on the response to temporary shocks.

2.1.3 STUDIES ON THE ASYMMETRY OF SHOCKS IN EMU

Different types of shocks impact the economy in different ways. Sector-specific shocks, for example, will hit countries with a high exposure to the affected sector disproportionately much. Shocks could also become asymmetric due to a shock absorption at varying speeds.

Higher disparity in the European Economic Cycles after the GFC

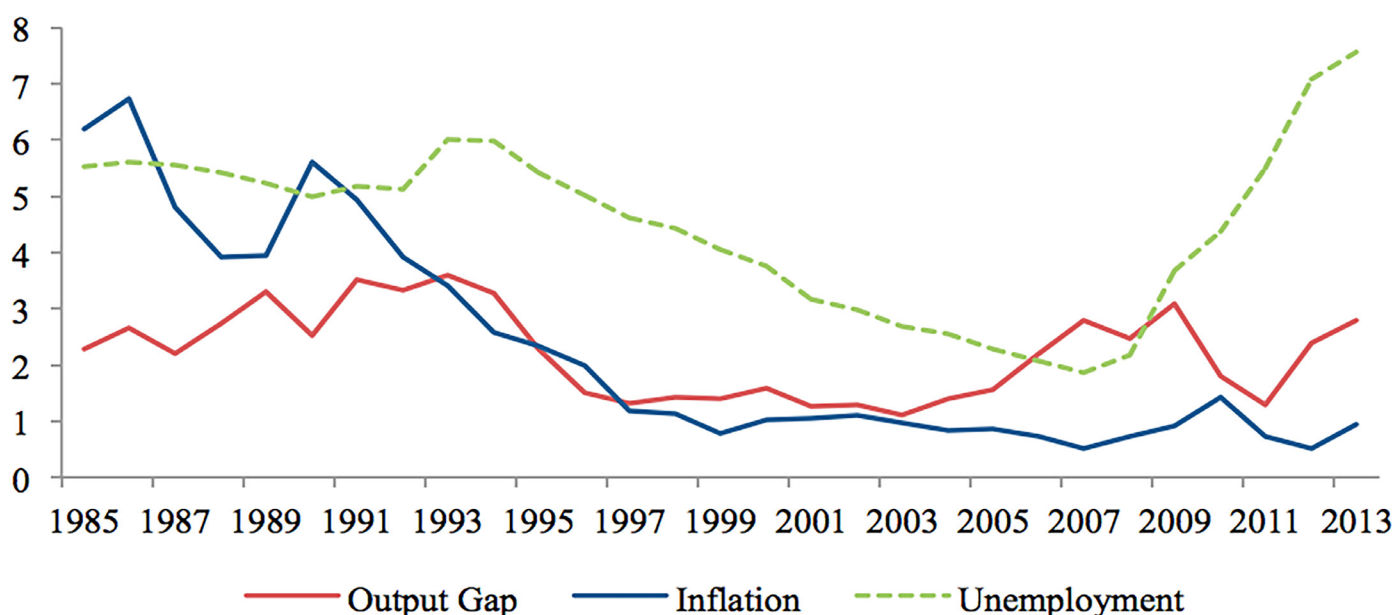


Figure 1: Output gaps, inflation and unemployment in 12 euro countries 1985-2013

Source: IMF World Economic Outlook (yearly data from the October 2014 database)

Most of the econometric studies on the asymmetry of shocks in Europe assess changes in time series data to deduce the existence of shocks from the traces they leave in economic variables (Wohlers, 1997, p. 82f). As not all changes in economic variables are caused by shocks, these indirect measures only provide us with approximations. Early findings by Bayoumi and Eichengreen (1993) suggested that shocks are more asymmetric in Europe's countries than in American regions. This higher dispersion, however, disappeared when the sample was limited to Europe's 'core area' – Germany, France, Denmark and the Benelux countries.

More recent studies often explore whether the introduction of the euro leads to more or less asymmetric shocks. The specialization hypothesis, as laid down in Krugman (1993), argues that deeper integration through a common currency results in greater sectorial specialization, including greater exposure to asymmetric shocks. The European Commission view assumes a positive link between trade integration and cyclical convergence in business cycles. As trade in the Eurozone is to a large degree intra-industry and countries trade the same categories of products, most demand shocks will affect countries in a similar way, the Commission argues (De Grauwe, 2012, p.23-24). Still, no consensus has been found about this matter. So let us look at the data to trace more recent shocks in the light of a longer period of time.

Figure 1 traces the disparity of key economic indicators in the twelve initial euro member states over the last 30 years. It is striking to see how a long period of business cycle con-

vergence has been reversed by the great financial crisis. A four times increase in unemployment rate disparity between 2007 and 2013, as well as a substantial increase in output gap disparity are clear evidence that the Eurozone was ill-equipped to cushion the economic shock that the financial crisis induced.

What are the underlying mechanisms that push prices, output and unemployment in opposite directions? The theory of optimum currency areas formalizes this problem.

opposite directions? The theory of optimum currency areas formalizes this problem.

2.2 BASIC DILEMMA OF OCA THEORY

Imagine two countries, Germany and Spain, are in full employment and in balance of payments equilibrium. Additionally, assume prices and wages to be rigid in the short run. A sudden demand shift from goods produced in Spain to goods produced in Germany causes unemployment in Spain. Simultaneously, inflationary pressures emerge in Germany as the increased demand for home-made products lifts up their prices. Figure 1 reflects this. For Germany - hit by a positive asymmetric shock - the demand

curve is shifted upwards, resulting in higher prices and more output. Spain experiences exactly the opposite: lower prices and less output. How persistent is this state? This depends on the adjustment mechanisms of the two countries. The next two paragraphs portray the adjustment process for a flexible exchange rate regime and for a monetary union.

2.2.1 SHOCKS UNDER FLEXIBLE EXCHANGE RATE REGIMES

A flexible exchange rate regime facilitates return to equilibrium for the two countries. Higher demand leads to an appreciation of Germany's currency against Spain's currency. This upgrades Spain's terms of trade and thus alleviates pressure to adapt. Spain could additionally run an expansionary monetary policy in order to stimulate aggregate demand and shift out the demand curve. Those two measures shift the demand curve back towards its initial level, offsetting the shock (step II of figure 3).

2.2.1 SHOCKS UNDER FLEXIBLE EXCHANGE RATE REGIMES

A flexible exchange rate regime facilitates return to equilibrium for the two countries. Higher demand leads to an appreciation of Germa-

Figure 2: The effect of an asymmetric shock on equilibrium

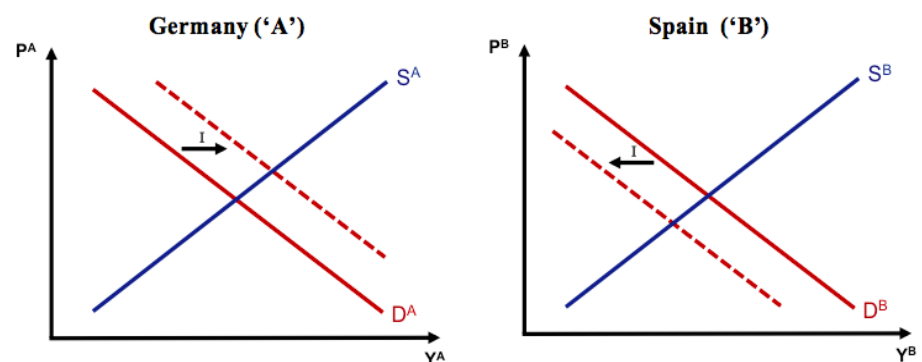
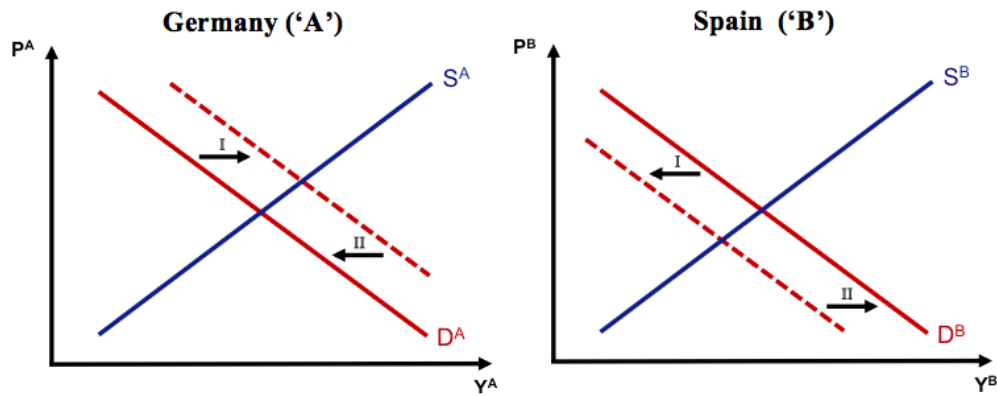


Figure 3: Adjustment process under a flexible exchange rate regime



ny's currency against Spain's currency. This upgrades Spain's terms of trade and thus alleviates pressure to adapt. Spain could additionally run an expansionary monetary policy in order to stimulate aggregate demand and shift out the demand curve. Those two measures shift the demand curve back towards its initial level, offsetting the shock (step II of figure 3).

2.2.2 SHOCKS IN A MONETARY UNION

Let us now assume Germany and Spain form a monetary union. The shift in demand from Spain to Germany moves the respective demand curves in the same way as described above. However, neither the exchange rate mechanism nor monetary policies are feasible for either of the countries. Consequently, they will have to resort to different ad-

justment mechanisms. According to the theory of optimum currency areas, the four most effective ways for countries in fixed exchange rate regimes to restore equilibrium are:

- (i) Flexibility of wages and prices (Friedman, 1953)
- (ii) Labor mobility (Mundell, 1961)
- (iii) Capital mobility (Mundell, 1973)
- (iv) Tax-funded cross-subsidization (Kenen, 1969)

How well is each of these mechanisms suited to cushion temporary shocks in EMU? The following chapter evaluates this. It follows the European Commission's (1993) approach, assessing them on the basis of the three most important features

for adjustment mechanisms. These are:

- (i) Temporary character – is the mechanism suitable for the adjustment to transitory shocks?
- (ii) Significance of impact – is the output gap substantially cushioned?
- (iii) Timing – when does the mechanism start functioning?

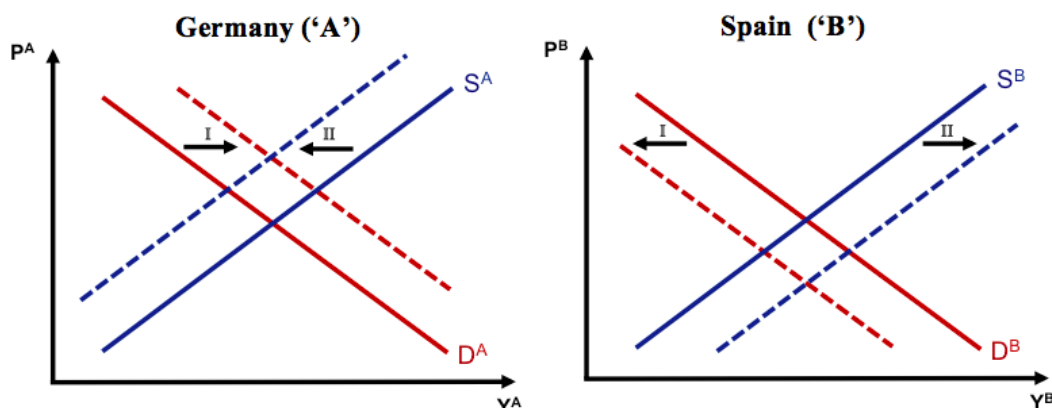
3. ADJUSTMENT MECHANISMS IN THE EMU

3.1 FLEXIBILITY OF WAGES AND PRICES

3.1.1 THEORETICAL CONSIDERATIONS

Recall that the last example postulated prices to be sticky in the short run.

Figure 4: The adjustment process through factor mobility



Eliminating this assumption leads to a very intuitive way for Spain and Germany to restore equilibrium output. As changes in prices have the same effect on the terms of trade as changes in exchange rates, they could replace the exchange rate mechanism - if they were as flexible as exchange rates.

The adjustment process as illustrated in figure 4 would work as follows: Unemployed Spanish workers reduce their wage claims, shifting down Spain's supply curve. The excess demand for labor in Germany will raise the wage claims of the German workforce and thus shift up its supply curve. These shifts lead to a new equilibrium in both countries. Spain has increased its competitiveness vis-à-vis Germany and thereby reinstalled output at a lower price level. The opposite is true for Germany.

How realistic, however, are fully flexible wages and prices? As most wage negotiations only take place once a year, and prices for many products are determined months in advance, rather than ad hoc, full wage and price flexibility in reality is unattainable. The less flexible wages and prices are, the more negative will the output gap have to be and the longer will unemployment have to rise in order to induce the required reactions of wages and prices. These unwanted effects can, however, be reduced: the flexibility of wages and prices is to a large degree a function of the rigidity of labor and product markets (Matthes, 2009).

3.1.2 PRODUCT AND LABOR MARKET RIGIDITIES IN THE EUROZONE

The OECD (2009) finds labor markets in Europe to be relatively rigid, especially in southern Europe. A high degree of employment protection and a high trade union density can lead to

less flexible wages. Based on these parameters, the four largest euro countries have substantially more rigid labor markets than the US (cf. figure 5). This induces wage rigidities: Real wages in Europe move much less in response to unemployment than those in the US (Matthes, 2009; European Commission, 2008).

Wages are a main determinant of prices, which is why the flexibility of wages and prices is highly interconnected. Another main driver of price flexibility is product market rigidity. A very objective, albeit somewhat superficial measure for this is the OECD PMR indicator (Maravalle et al., 2008). Yet again, with a score of 1.11 in 2008 the US scores better than the euro countries, the values of which fluctuate around 1.5. These findings indicate higher price rigidities in the euro area than in the US.

3.1.3 ASSESSMENT

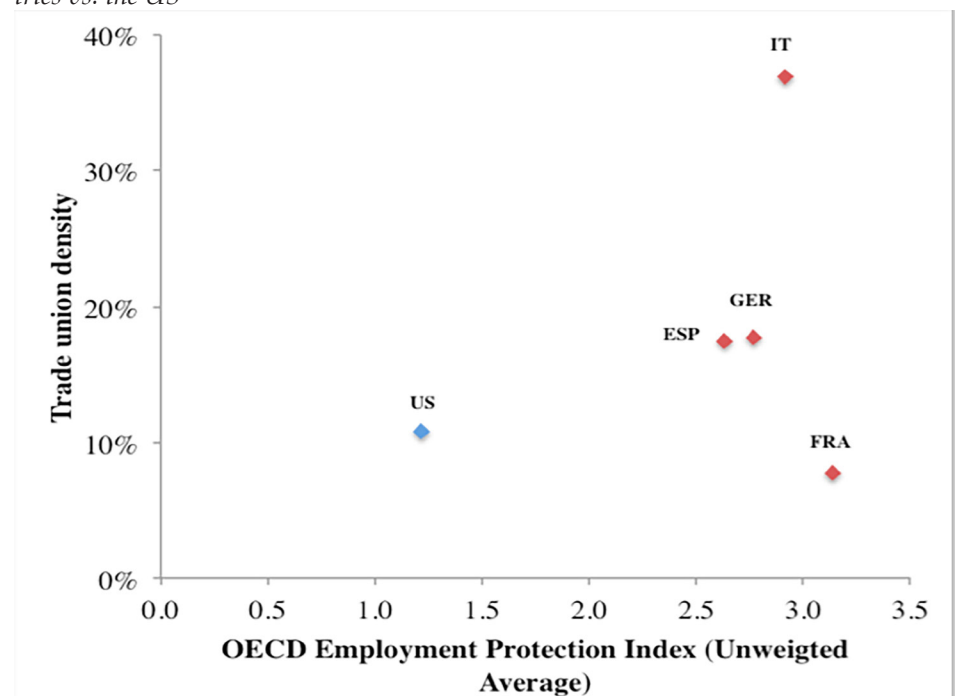
While OCA theory places special emphasis on the long-term adjustment function of price and wage flexibility,

many recent studies have singled out its importance for adjustment to temporary shocks. There is little dispute about its appropriateness for both functions.

The significance of its impact is difficult to measure. Even though wage and price flexibility provides no explicit cushion against shocks, it can both decrease the volatility of economic aggregates (especially unemployment) and accelerate the speed of adjustment. A delay in price adjustment often is the driving factor for an overshooting in layoffs, as many firms lack both the foresight and the financial endurance to cushion shocks (Nerlich, 1996).

But how long does it take for prices in EMU to move? The evidence from chapter 3.1.2 is indeed reflected in the numbers. According to Cournède, Janovskaia and van den Noord (2005), the Eurozone exhibits a relatively high inflation persistence: While in the US, prices change every two quarters, the Eurozone interval was in between four and five quarters (cf. Hofman

Figure 5: Employment Protection and Trade union density in the four largest euro countries vs. the US



and Remsperger, 2005). The Eurozone thus has the potential to improve wage and price flexibility in order to more effectively absorb shocks.

3.2 LABOR MOBILITY

3.2.1 TEMPORARY CHARACTER

In his first paper about optimum currency areas, Mundell (1961) pointed at labor mobility as a possible adjustment mechanism for permanent shocks. *Prima facie*, labor mobility seems inappropriate as a cushion for temporary shocks. After all, moving to another country involves substantial costs, both economically and socially. Moreover, emigrants might be missed in the next upswing. Labor mobility, consequently, is not well-suited for the adjustment to transitory shocks. As shocks cannot be classified as temporary or permanent in the first place, a short discussion of the other two criteria nevertheless is expedient.

3.2.2 SIGNIFICANCE OF IMPACT

In the Eurozone, language barriers, different cultures and uncertainties regarding the transfer of pension rights aggravate migration. Only 0.3 percent of the EU-27 population moved across national borders in the crisis year of 2010. Compared to the 2.4 percent of the total population of the USA that relocated across state lines, and to an unemployment rate of about 10 percent in the euro area (IMF, 2014), the cushioning effect of migration seems to be negligible. (Eichengreen, 2014)

Bräuninger (2014) sheds a slightly more positive light on the more recent migration dynamics in the Eurozone. He observes a higher migration from the periphery to the core, even though migration within the Eurozone rep-

resents only a small share of overall migration. Germany's well-functioning labor market attracted a net immigration of 437'300 in 2013, of which only a fifth were from the GIIPS countries (figure 4). Among those countries, net emigration was highest in Spain, while the majority of their emigrants moved to Latin American countries. Bräuninger (2014) even claims that the unemployment rate in Spain would have been at 34.3% instead of at 26.1 in 2013 if there had been no change in migration trends. Labor mobility therefore most recently seems to have had a substantial cushioning effect in some countries, most notably Spain and Germany.

3.2.3 TIMING AND ASSESSMENT

A substantial part of the output path deviation in the crisis, however, seems to be permanent rather than temporary. The largest migration movements, moreover, have happened in the last two years (cf. figure 5)– a merely temporary shock most likely would have balanced out by that time. To sum it up, labor mobility is inherently inappropriate for the adjustment to temporary shocks, seems to be less effective than in other monetary unions (Blanchard and Katz, 1992; Eichengreen, 2014) and unfolds when most transitory shocks are al-

ready weathered. It therefore cannot be regarded as an effective adjustment mechanism for the Eurozone.

3.3 CAPITAL MOBILITY

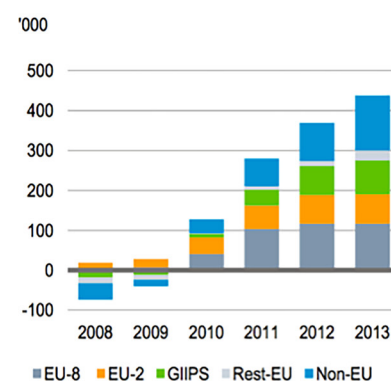
3.3.1 THE MECHANICS OF CAPITAL MOBILITY

It is astonishing that Mundell is so often referred to as one of the fathers of the European monetary union, as his 1961 article was quite sceptical about monetary union. In a later article, Mundell (1973), however, revised his opinion on currency unions. One main reason for this was the insuring capacity of capital flows. Fully integrated financial markets lead to risk-sharing among member states of a currency union.

Spanish residents and firms can diversify their wealth and thus participate in the booming German stock market, while Germans could share the burden of a weak Spanish stock market. In the same way, credit defaults would be spread on more shoulders. (cf. De Grauwe, 2012, p.231ff.) The diversification of risk acts as an automatic stabilizer that cushions temporary shocks.

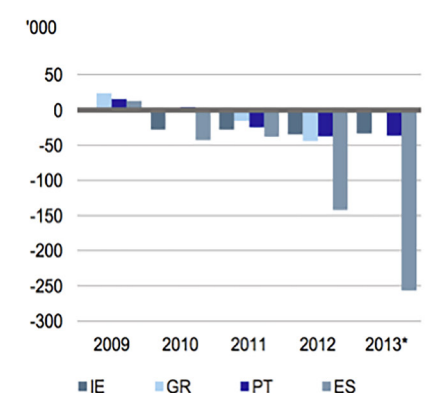
3.3.2 DOWNSIDES OF CAPITAL MOBILITY

Figure 6: Net migration to Germany



Source: Bräuninger (2014)

Figure 7: GIIPS net migration



Source: Bräuninger (2014)

However, there are two substantial drawbacks to capital mobility as a cushioning mechanism. First, bond- and stockholders are a minority of the population, so the balancing effect will inevitably be limited. Second, capital mobility can also be the source for asymmetric shocks rather than its remedy. On the one hand, returns to scale in production could lead to a concentration of investment in regions of high activity – an argument set forth by Krugman and vividly discussed thereafter (Krugman, 1993, cf. chapter 2.1.3). On the other hand, full capital mobility enables capital flight, which can further aggravate the economic woes of a country.

3.3.3 ASSESSMENT

An automatic stabilizer, capital mobility is inherently an adjustment mechanism for temporary shocks, rather than a driver of permanent adjustments. Additionally, as financial markets immediately price in (some even say: anticipate) asymmetric shocks, the insurance mechanism has an immediate effect. Yet how big of a cushioning impact does it have?

Sørensen and Yosha (2000) and Arreaza (1998) decompose cross-country variance of shocks to GDP and conclude that risk sharing through cross-country ownership of assets is negligible. Asdrubali, Sørensen and Yosha, on the other hand (1996), examined channels of interstate risk sharing in the United States. Their focus was shocks to the gross state product from 1967-1990. Their findings suggest that 39% of the shocks were smoothened through capital markets, 23% were smoothened through credit markets and 13% were cushioned through the federal government. Consequently, only one quarter

was not smoothened. In other words, financial markets and institutions in the US accounted for 62% of the absorption of state idiosyncratic shocks. How big of an effect does risk-sharing through financial markets have in Europe? While clear-cut empirical studies for EMU are still missing at this point, a brief review of the impact of the sovereign debt crisis on capital markets in Europe indicates that risk-sharing still remains below the extent in the USA (cf. also Matthes, 2009, p.119).

Figure 8 contrasts the nationality of government bondholders with yields on selected government bonds. The graph shows that the share of non-resident bondholders has increased substantially in the process of European integration. As the sovereign debt crisis has re-installed a significant home bias in Europe (Kotz, 2012), foreign holders of peripheral governments bonds disposed of their foreign holdings, even though this involved realizing substantial losses. This caused domestic banks to bear an even higher share of the burden. As additionally the interbank market in the Eurozone disintegrated during the crisis and capital flows to the periphery drained, the ex-post degree of risk-sharing fell short of expectations. While banking union

should reinstall confidence and foster risk-sharing, its impact will not be tested before the next crisis.

In a nutshell, capital mobility acts as a very effective cushioning mechanism for temporary asymmetric shocks. In the event of a severe shock, flaws in the construction of a monetary union as well as the re-emergence of a home bias can, however, result in an aggravation, rather than a mitigation, of shocks. Capital mobility, thus, is a double-edged sword.

3.4 FISCAL TRANSFERS

3.4.1 FISCAL TRANSFERS ON THE COUNTRY-LEVEL?

Unlike capital mobility, which in the first place insures capital market participants, fiscal transfers can provide an insurance mechanism for every citizen. Theoretically, the member countries could fulfill this function themselves, by borrowing in downturns and recalibrating the budget in upturns. As experience has shown, policy incentives are not sufficient for latter to happen, which is why countries, not only in Europe, have accumulated substantial amounts of debt. Additionally, large current account imbalances can

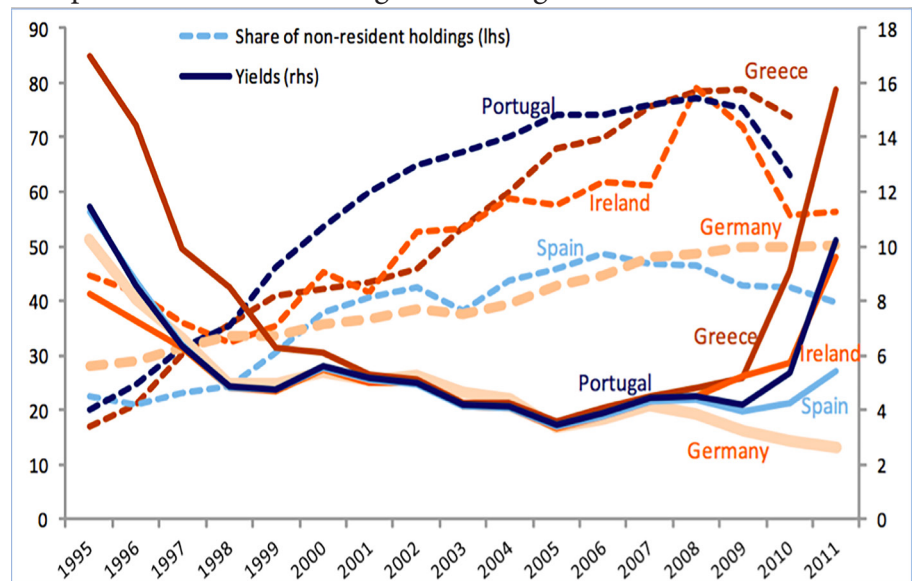


Figure 8: Non-resident holdings and yields on selected government bonds

lead to soaring budget deficits once capital flows stop. Those two factors forced European periphery countries to embark on a procyclical fiscal stance, rather than making up for the demand shortfall. As monetary policy had rapidly exhausted all possibilities, and the fiscal multiplier most likely was above 1, the fiscal tightening hit those countries especially hard.

For long, European policymakers have adhered to the belief that the Stability and Growth Pact (that capped debt levels at 60% and new borrowing to 3%, but was only partially enforced) would put enough fiscal discipline on the members of the euro area. As early as 1990, the 'One Money, one Market' report raised a red flag about the condition of public finances:

Unsustainable budgetary positions in a Member State, ultimately leading to either default or debt monetization, would be a major threat to the overall monetary stability. [...] This is a serious matter of concern. (European Commission, 1990)

While the financial crisis clearly revealed that a stabilization mechanism on the national level was not sufficient to cushion shocks, the fear of moral hazard in most creditor countries has prevented policymakers from agreeing on more than a strengthening of the Stability and Growth Pact.

3.4.2 FISCAL POLICY ON A COMMUNITY LEVEL

As a result of the recent turmoil, a centralization of fiscal policy now is back at the center of debate. A centralized fiscal policy works like an insurance mechanism. When in Spain output declines and unemployment increases, transfers from booming Germany could mitigate the shock through two

channels. The income taxes and social security contributions from Spain collected by the European government decline, while unemployment benefit payments by the European authorities increase. Exactly the opposite occurs in Germany. Thus, a centralized European budget automatically redistributes income from Germany to Spain. (De Grauwe, 2012)

3.4.3 ASSESSMENT

Just like capital mobility, fiscal transfers only work as an adjustment mechanism to temporary, rather than permanent shocks. The timing depends on the type of fiscal policy that is used. While discretionary fiscal policies have to pass legislation and hence tend to be inappropriate for macroeconomic stabilization, "automatic fiscal stabilizers", such as unemployment insurance have an immediate mitigating effect.

There is little agreement regarding the degree to which fiscal policy can mitigate shocks. While the Ricardian equivalence postulates it to be negligible, estimates for the stabilizing effect in the US range from 11% of the shock to 31% (Bayoumi and Masson, 1995). One reason for these wide array of estimates is disagreement on the size of fiscal multipliers, estimated for which range from close to 0 (Barro 2009), up to 3, in severe recessions (Auerbach/Gorodnichenko 2012).

With a European budget at around two percent of the European GDP, European institutions are still far from providing automatic fiscal transfers from boom countries to recession countries that act like automatic shock absorbers. Installing fiscal stabilizers on the euro-level would require a significant increase in euro-level spending capabilities and a shift in the spending approach that currently is geared towards

closing structural gaps rather than absorbing cyclical shocks. The size of its impact would be a function of its design, but is meanwhile expected to be significant (Dullien, 2012; Caudal et al., 2013).

4. CONCLUSION

The paper at hand takes the theory of optimum currency areas as a starting point to analyze asymmetric shocks in the Eurozone. Macroeconomic stabilization is instrumental to limit the volatility of those economic parameters and to return to the long-term growth path at a relatively high speed. The recent increase in output and inflation discrepancies thus calls for a reassessment of EMU's adjustment mechanisms.

The paper analyzes the four most important stabilizers in a currency union: wage flexibility, labor mobility, capital mobility, and fiscal transfers. It analyzes those mechanisms based on their temporary character, their significance of impact and their timing.

The paper finds that labor mobility is less effective than in other monetary unions and unfolds when most transitory shocks are already weathered and thus is inherently inappropriate for the adjustment to temporary shocks. As flexible prices provide no cushion against income shocks, only capital mobility and fiscal transfers remain as effective insurance mechanisms for citizens of the Eurozone. The scope for improvement with capital mobility, in turn, is rather limited for EMU. Moreover, severe shocks can lead to a situation where capital mobility result in an aggravation, rather than a mitigation, of shocks. This leaves fiscal transfers as the most effective lever for EMU to cushion asymmetric shocks.

ISLAMIC FINANCE

AN EMERGING MARKET

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SINCE THE ESTABLISHMENT OF ISLAM, Muslims have structured all aspects of life around Islamic principles and pillars. In recent decades, adhering to Sharia, or “Islamic law”, has become especially challenging because as the world evolves and becomes more interconnected, Sharia-compliance becomes increasingly complex. This is especially true in socio-economic fields because Sharia forbids the use of interest. In an international environment where the financial system is widely based on interest, it therefore is a daunting task to create practical financial institutions with an interest-free structure. However, in a pioneering effort to return to the original teachings of the Qur’an and Sharia, Muslim economic scholars established the first modern Islamic bank in Egypt in the 1970s, subsequently establishing the burgeoning field of Islamic finance.

THE ISLAMIC ECONOMIC THEORY

In essence, Islamic finance is the intersection of the Western economic model and Sharia. Islamic economic principles offer the individual freedom to create wealth “with an environment controlled by Divine Guidance, which sets moral rules and norms of behavior that must require the utmost sincerity of intention. When these rules and norms are internalized and acted upon by peo-

ple, peace and prosperity result for the wider society.” More specifically, Islamic financial institutions apply Sharia principles to particular financial instruments and transactions in order to provide Sharia-compliant goods and services to investors. This “economic theory” emphasizes the distinction between halal (lawful) and haram (forbidden) goods and services and “encourages many procedures such as eliminating interest-based loans (also known as ‘Riba’ loans), pricing goods and services in terms of a commodity index, and abolishing selling and trading in securities and goods that the seller or trader does not have title to, among other procedures.” Even though these financial institutions are based in Sharia and the Qur’an, it does not imply that they are exclusively for Muslims. In fact, there are numerous feasible applications for companies and individuals not rooted in the Islamic tradition.

Because of the wealth of information and highly technical and intricate nature of Islamic finance, this paper is designed to focus on the essential features and provide a working knowledge of the subject. The basic principles of Islamic banking will be explored along with common financial techniques that are Sharia-compliant, which include Murabaha, Musharakah, Ijara, Sukuk and Takaf-

ul. Since Islamic finance is a relatively new phenomenon that is growing exponentially, the implications of its future impact on the global economy will also be assessed. However, a brief understanding of Islam and Sharia is foremost imperative in order to comprehend how and why finance is impacted.

UNDERLYING ISLAMIC PRINCIPLES

The primary sources of Islamic teachings and rulings are derived from the Qur’an and the Sunnah. The Qur’an is seen as the supreme authority in Islam, intended for all times and places, including business transactions; it is the literal word of God, revealed to the Prophet Muhammad via the Archangel Gabriel. On the other hand, the Sunnah is the collection of the sayings and actions of the Prophet Muhammad. Together the Qur’an and Sunnah create the ethical code and moral behavior that all Muslims follow, known as Sharia. This body of law is crystalized without any new legislation and therefore needs to be elucidated within modern contexts. Thus, it is imperative for an Islamic financial institution to comply with Sharia and many banks hire a “Sharia board” of religious scholars to ensure that the practices and techniques are in fact Sharia-compliant. These religious scholars are experts in Islamic law who work similarly to auditors

to ensure that the bank's transactions are not haram. There are currently 5-6 Sharia scholars of the highest stature in the world, each of whom sit on an average of 70-80 Sharia boards and are paid approximately \$30,000 per board per year. Since there are such few scholars under high demand, a form of monopoly power is created in which these scholars attempt to limit the "prestige value" of lesser scholars in order to control more of the market and increase their personal profit. Consequently, this is a point of contention within Islamic finance that has yet to be resolved or equalized. Nonetheless, Sharia-compliance is integral to Islamic finance, which implies that financial institutions are willing to go to great lengths to guarantee that their goods and services are in fact halal.

THE ISLAMIC VIEW ON INTEREST

The most apparent feature that prevents conventional finance from being halal is interest, or Riba. In numerous verses throughout the Qur'an, Riba is specifically forbidden in business activities. For instance, the Qur'an states:

Those who consume interest cannot stand [on the Day of Resurrection] except as one stands who is being beaten by Satan into insanity. That is because they say, 'Trade is [just] like interest [Riba].' But Allah has permitted trade and has forbidden interest. So whoever has received an admonition from his Lord and desists may have what is past, and his affair rests with Allah. But whoever returns to [dealing in interest or usury] - those are the companions of the Fire; they will abide eternally therein.

The underlying Islamic tenet for outlawing interest is that interest does not share fairly the risk of opportunity between the investor and the

debtor. Moreover, the Islamic viewpoint is that money is simply a medium of exchange, a way of defining value; it does not have value in itself and "therefore should not be allowed to give rise to more money, [while] the human effort, initiative, and risk involved in a productive venture are more important than the money used to finance it." However, Western markets have found justification for the use of interest. Some of those justifications include: the reward for savings, compensation for the temporary loss of capital, and the benefit for making use of the time value of money.

ISLAMIC INVESTMENT BANKING

The recent increase in demand for Riba-free products and services among Muslims have encouraged international banks to find innovative methods and tools that are Sharia-compliant. Through this process, rough "outlines" of what has been deemed permissible or impermissible under Sharia have been created.

Firstly, long term investing in stocks, or equities, of a company is permissible so long as the company does not violate Sharia by dealing in pork products, alcohol, debt, pornography, gambling, interest, etc. However, if this rule was strictly followed, it would mean that the vast majority of publically traded companies would be haram. Take, for instance, a typical airline company that provides alcohol as part of their inflight services. With a strict following of Sharia, one would not be able to invest in the airline, even though income from alcohol is relatively insignificant for the airline as a whole. Consequently, Sharia scholars created a "margin of tolerance" that allows Sharia-compliant investment in said airline so long as the haram income is less than 5% of the air-

line's overall income. Moreover, this "margin of tolerance" extends into the debt of a company, which allows Sharia-compliant investment in companies so long as their debt is less than one-third of their value. On the other hand, the short-selling approach to investing is strictly prohibited because it is a deferred transaction that does not occur in the same economic setting in which the deal is originally conducted. These guidelines, along with other "rules of thumb," are combined to create a market for Islamic investment banks.

THE SPECIFIC MECHANICS OF ISLAMIC PRODUCTS AND SERVICES

Islamic banks offer an array of asset services that apply general rules to develop the mechanics behind Sharia-compliant products and services. This process results in the creation of current accounts, savings accounts and investment accounts. Current accounts are essentially the same as conventional checking accounts in which deposits are guaranteed and transactions are straightforward. Conversely, savings accounts are slightly more complex because of the varying interpretations of Sharia. With a looser interpretation of Sharia, the bank essentially gives a quarterly "gift" to the account holder that corresponds to the interest rate, but some individuals view this practice as implied Riba. With a more strict interpretation of Sharia, the bank ultimately treats the savings account as an investment account "where the funds in each account are merged with other accounts based on a similar risk tolerance profile and invested with the bank acting as the money manager." The depositor then receives a proportional amount from the loss or gain of the merged accounts without any guarantee of the safety of their invested assets.

MURABAHA – COST-PLUS FINANCING

Besides asset management, Islamic finance has developed other innovative Sharia-compliant tools that can be utilized on a personal, commercial and international level. One of these tools is Murabaha. Murabaha is a debt instrument that acts as a “Riba-free loan” by utilizing cost-plus financing. After the customer is found to be financially reliable through qualitative and quantitative analysis synonymous to credit checks, the bank buys the requested item in its own name. The bank then proceeds to resell the item to the customer through a series of installments that include a mutually agreed upon profit for the bank. Generally, this profit “coincidentally” aligns with the interest that the bank would have gained if they had used a conventional loan. Murabaha can be used to raise large amounts of capital for a cooperation or the purchase of a car or house for a family. However, there are two main issues with Murabaha. First, Murabaha is difficult to put into practice outside of the Islamic world because of capital gains taxes and laws prohibiting banks engaging in direct transactions for its customers. Second, under Sharia, the customer is not obligated to purchase the item back from the bank if they are under financial distress. This implies that there is an added risk for the bank since it could become problematic to recoup its investment. In order to combat this risk, banks keep records of their customers’ previous transactions and use this as part of the process to determine if the customer is financially reliable.

MUSHARAKAH – PROFIT-LOSS SHARING

Another Islamic financial instrument is Musharakah, which is largely

grounded in a profit-loss sharing (PLS) approach. Musharakah allows each involved party to share in the profits and risks associated with the endeavor. After the customer requests a particular amount of money for his business, the financial institution assesses the risk associated with the proposal. If it is deemed to be a viable investment, the customer and financial institution enter a contract in which they are considered business partners. The customer will receive the necessary funding while the financial institution will receive “a return in the form of a portion of the actual profits [or losses] earned, according to a predetermined ratio.” This is a more intimate relationship than the conventional debtor-creditor relationship. Both parties are treated equally if there is contract infringement and the bank remains a partner in the company until the customer buys out the bank’s partnership by repaying the premium. Similar to a typical joint-venture agreement, Musharakah encourages innovation and helps efficiently allocate resources within the company that was financed by the bank.

IJARA – ISLAMIC LEASING

A further technique used in Islamic finance is Ijara, which is considered to be an alternative to conventional leasing. Ijara utilizes the Sharia-compliant method of renting the “right to use” an item. In Ijara, a “known benefit arising from a specified asset [owned by the financial institution] is made available in return for a payment, but where ownership of the asset itself is not transferred.” Throughout the specified time of allotted use, the client pays a recurring, typically monthly, payment while the financial institution repairs and maintains the asset. However, in order for this transaction to be of Sharia-compliance, the asset

being leased cannot be consumed or destroyed in the process. Thus, items such as money, food and basic chemicals cannot be used in ijara.

Ijara is a flexible tool in Islamic finance and can be used in many situations. For instance, a “subcategory” of ijara includes ijara wa iqtina, which is essentially “leasing to own”. Ijara wa iqtina is comparable to its conventional counterpart except that in ijara wa iqtina, the lessee is not contractually obligated to see the lease to fulfillment. Ijara wa iqtina is used as a common alternative to Murabaha in the purchasing of houses or medium to long term investments.

SUKUK – THE ISLAMIC BOND

An additional instrument widely used in Islamic finance is the sukuk, or Islamic bond. A sukuk is like a conventional bond in that it is issued by a company or organization wanting to raise capital. Likewise, a sukuk is bought and sold on an exchange where price is calculated by comparing risk, its coupon, credit rating and benchmarks. However, unlike typical bonds, the owner of the sukuk owns and leases the asset back to the company through “lease-to-own” techniques such as ijara wa iqtina. Essentially, when the investor purchases the sukuk, they “fully own the asset and lease it to the company for a specified price over a period of time, ending with the maturity of the [sukuk] and the purchase of the asset from the investors for the initial price of the [sukuk].” Another difference between a sukuk and a conventional bond is that the sukuk owner bears more risk than his counterpart in the typical bond market. This occurs because the sukuk owner now owns the asset and if that asset is destroyed or loses value, the investor assumes all liability with-

out compensation; however, Islamic banks offer asset insurance for the sukuk to combat this additional risk.

TAKAFUL – ISLAMIC INSURANCE

Asset insurance is not the only insurance plan offered in Islamic finance; general, health and family (life) plans are available and considered halal by Muslim scholars. As a whole, insurance in Islamic finance is called takaful. It has previously been viewed as gambling in the eyes of Sharia scholars, but recent developments have allowed it to become Sharia-compliant. For takaful to be halal, all policyholders essentially “agree to guarantee each other and, instead of paying premiums, they make contributions to a mutual fund, or pool,” based on their policy and personal circumstances. This pool, called a Takaful Fund, is managed by a Takaful Operator who charges an “administrative fee”. Subsequently, any claims made by participants are “paid out of the Takaful Fund and any remaining surpluses, after making provisions for likely cost of future claims and other reserves, belong to the participants in the fund, and not the Takaful Operator, and may be distributed to the participants in the form of cash dividends or distributions.” Consequently, takaful is an example of the expansion of Islamic finance into new markets in hopes to appeal to a greater range of Muslims with new products and services.

THE FUTURE OF ISLAMIC FINANCE IN INTERNATIONAL MARKETS

A large portion of these pioneering products and services are developed in Malaysia, which has a population that is 61.3% Muslim. In 2012, Malaysia accounted for 10% of the world’s Islamic banking assets, following Saudi Arabia (12%) and Iran (43%). According to the Malaysia’s central bank, nearly 80% of Islamic financial assets are entrusted in Sharia-compliant banks while 15% are in sukuk, 4% in Islamic investment funds and 1% in takaful. Moreover, the influx of “petro-dollars” and wealth in the Middle East that followed the October War and 1973 oil crisis has aided Islamic finance to find a prominent foothold in the larger financial world. Nonetheless, there is still room for further expansion in relatively “unbanked” Muslim countries and in already developed countries in the West. In fact, these Sharia-compliant assets are valued to be \$2 trillion today and are expected to grow by an average of 19.7% a year to 2018.

As an industry with extremely high growth and profit potential, it is not a surprise that western firms are trying to gain traction in Islamic finance. For instance, Goldman Sachs has a specialist division in Islamic finance that previously attempted to enter the sukuk market in 2011, but was heavily criticized by Islamic scholars for creating a sukuk that was not Sharia-com-

pliant. However, in 2014, Goldman is again attempting to become the second global financial institution to issue an Islamic bond; if the issue is successful, it is expected to entail \$500 million of five-year Islamic bonds.

Financial institutions are not the only ones that are entering the world of Islamic finance. Currently, the United Kingdom is the leader among western countries in Islamic finance and is helping push the frontier. In 2013, Prime Minister David Cameron announced that the U.K. will issue a \$327 million sukuk, thus making it the first non-Muslim country to take part in Islamic Finance. On the other hand, the United States has been more hesitant to introduce Islamic banking for fear of funding terrorist organizations – more than likely, this view is rooted in the events of 9/11 and the subsequent “war on terror”. However, numerous experts have testified in Congress stating that “there is no evidence to prove that Islamic banks are more prone to facilitating transactions for money launderers and terrorist financiers than other banks.” Either way, it is clear that Islamic finance is well on its way to becoming a global phenomenon and it is imperative for the United States and other global powers to recognize that Islamic and conventional finance can prosperously coexist in an innovative manner.



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