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Windfall Payment Decision-Making: A Case Study of Pennsylvania Counties Receiving Funds from the Natural Gas Impact Fee (Act 13)

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WINDFALL PAYMENT DECISION-MAKING: A CASE STUDY OF PENNSYLVANIA COUNTIES RECEIVING FUNDS FROM THE NATURAL GAS IMPACT FEE (ACT 13)

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ABSTRACT

Given the economic 'boom' and 'bust' cycle associated with natural resource extraction, the decision to spend or save the revenue generated by such activity (which is considered a financial windfall), has important policy implications. Two streams of literature exist which help to explain and predict the behaviors of those facing such payments. One of these streams contends that the size of a windfall payment is inversely related to consumption. More specifically, this stream posits that as the size of a windfall in proportion to an individual or household's budget increases, consumption of the windfall decreases. This study attempted to test this contention in the public arena by examining three counties in Pennsylvania that received windfall payments from a newly established natural gas impact fee.

Through interviews with public officials familiar with the payment decision-making process and an examination of archival materials from Clearfield, Greene, and Tioga Counties, this study found that windfall size is inversely related to consumption. Clearfield County, which received the smallest payment relative to the total budget of the county, intended to spend most of the windfall while Tioga County, which received the largest payment relative to the total budget, intended to save most of the payment. Greene County, which received a medium-sized payment, also intended to spend most of the windfall.

Furthermore, the study revealed that officials in Clearfield County largely perceived the payment to be an insubstantial cash "bonus" with limited investment

opportunities. Officials in Greene County considered the payment additional income and planned to use the payment to fund various projects. Only Tioga County considered the payment a substantial sum and insisted that the payment be saved.

This study concludes that the stream of literature focused on windfall size proves applicable in the public arena. Furthermore, this study contends that given a better understanding of the perceptions of and attitudes toward the payment, policymakers in Clearfield and Greene Counties should alter current behaviors. In the future, jurisdictions facing windfall payments in Pennsylvania and elsewhere should be more prudent in the decision-making process in order to account for the long-term effects of resource extraction on the local economy as well as the impacts of the impending resource 'bust'.

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INTRODUCTION

In the past decade, natural gas extraction in Pennsylvania has grown extensively. With trillions of cubic feet of natural gas available as a part of the Marcellus Shale Formation, extraction is expected to continue to grow in the near future (Andrews, et al., 2009). As a result, Pennsylvania anticipates having a greater role in satisfying the nation's energy needs while creating jobs and growing a stronger economy. However, the lifespan of the natural gas extraction industry, like many other non-renewable resource extraction industries, is uncertain. A sudden fall in demand or an accelerated depletion rate of natural gas reserves may cause the industry to falter. If Pennsylvania relies too heavily on natural gas and the industry collapses, the state's economy could experience significant adverse effects including high unemployment and considerable long-term debt (Ross, 1999).

In addition to the economic risk associated with the prodigiousness of natural gas extraction as an economic driver, the industry imposes significant negative externalities. Already, communities with natural gas development complain of deteriorating roads and infrastructure as a result of extraction. Citizens also worry that hydraulic fracturing for natural gas or 'fracking' may have adverse effects on the environment. Concerns over water pollution in extraction communities, for example, are not uncommon. In an effort to address these issues and provide a return for communities, lawmakers in the state of Pennsylvania enacted an impact fee for natural gas wells in February of 2012. Funds

generated by the impact fee, established under the legislation known as Act 13, may be used by counties and municipalities to address some or all of these issues.

The language of Act 13 regarding usage of funds does not explicitly limit counties and municipalities to addressing such issues, however. While the legislation established thirteen approved or state-sanctioned spending categories for the revenue, the categories are broadly defined. Consequently, counties and municipalities may use the funds for various purposes ranging from building parks to cutting taxes to expanding human services. The thirteen approved categories as listed on the fund usage report required by the legislation are shown in the table below. At the time this study was conducted, the allocations of the funds were available for only a fraction of local governments. Thus, the number of jurisdictions choosing to save or spend the revenue had yet to be determined. If spent, the funds may be used to address the externalities associated with extraction, promote economic diversification, saved for capital improvements, or any other number of uses.

Table 1- PUC Fund Usage Report

CATEGORY	AMOUNT (rounded to the nearest hundred)
1. Construction, reconstruction, maintenance and repair of roadways, bridges and public infrastructure.	
2. Water, storm water and sewer systems, including construction, reconstruction, maintenance and repair	
3. Emergency preparedness and public safety, including law enforcement and fire services, hazardous material response, 911, equipment acquisition and other services	
4. Environmental programs, including trails, parks and recreation, open space, flood plain management, conservation districts and agricultural preservation	
5. Preservation and reclamation of surface and subsurface waters and water supplies	
6. Tax reductions, including homestead exclusions	
7. Projects to increase the availability of safe and affordable housing to residents	
8. Records management, geographic information systems and information technology	
9. The delivery of social services	
10. Judicial services	
11. Deposit into the municipality's capital reserve fund if the funds are used solely for a purpose set forth in Act 13 of 2012	
12. Career and technical centers for training of workers in the oil and gas industry	
13. Local or regional planning initiatives under the act of July 31, 1968 (P.L. 805, No. 247), known as the Pennsylvania Municipalities Planning Code	
TOTAL	

Because the funds were not expected before 2012 and the future of such payments is not guaranteed, the funds made available by the law may be regarded as a windfall payment (Widerquist & Howard, 2012). While much of this literature regarding natural resource windfalls has an international focus, a vast body of literature exploring windfall payments in the United States from other sources (e.g. tobacco master settlement agreements, unexpected benefit payments, etc.) exists. Within this body, at least two distinct streams emerge. One stream, pulled primarily from the field of public budgeting,

largely leaves windfall payment decision-making undistinguished from non-windfall payment decision-making and suggests that such payments are subject to the same political processes as other funds. Thus, the stream emphasizes the importance of citizens, groups, and external factors in the decision-making process for windfall payments. More specifically, researchers within this stream contend that citizens, lobbyists, and politicians as well as environmental concern/awareness, fiscal stress, intergovernmental budget cuts, and social discontent all influence the decision to spend or save windfalls (Levine, Rubin, & Wolohojian, 1981; Sloan, Carlisle, Rattliff, & Trogdon, 2005)[1]. Furthermore, if spent, these factors significantly influence how the funds are allocated (Cutler, Elmendorf, & Zeckhauser, 1993; Jordan, 2003).

Another stream, adapted from economics and more specifically behavioral economics, emphasizes the importance of the size of the windfall payment in the decision-making processes (Keeler, James, & Abdel-Ghany, 1985; Milkman, Beshears, Rogers, & Bazerman, 2007; Shefrin & Thaler, 1988). To be more specific, research studies of individuals and households suggest that windfalls that are small in proportion to an individual or household's total income are typically spent rather than saved with the converse being true for windfalls that are large in proportion to an individual or household's total income (Keeler, James, & Abdel-Ghany, 1985; Milkman, Beshears, Rogers, & Bazerman, 2007). A possible explanation for this tendency is that individuals use "mental accounting" models in the decision-making process for windfall payments. In this "mental accounting" model, windfalls may be viewed as 'bonuses' to be spent

[1] See also Arnett, 2012; Cutler, Elmendorf, & Zeckhauser, 1993; Garrick, Johnson, & Neiman, 2009; Hite & Ulbrich, 1986; Jordan, 2003; Pammer, 1990; Zhao, Ren, & Lovrich, 2010.

(Milkman, Beshears, Rogers, & Bazerman, 2007; Shefrin & Thaler, 1988). Although this stream has been limited in scope to the behaviors of individuals and households and not collective or public decision-making, applications of such an approach to the public arena are worth exploring (Congdon, Kling, & Mullainathan, 2011). If applied to public decision-making, one might replace the individual with the jurisdiction and total income with a jurisdiction's total budget.

This study explored the two streams of literature and attempted to bring clarity to the discussion regarding saving and spending patterns for the payments to jurisdictions in Pennsylvania. Specifically, this study attempted to test the notion that windfall size as well as the recognition of a payment as a 'bonus' are primary determinants of a jurisdiction's propensity to spend or consume. Following the logic of this stream of literature, counties with a large payout relative to the size of the overall budget should consider the funds an investment opportunity and save all or most of the revenue generated. Conversely, counties with small payouts relative to the size of the overall budget should consider the payment a 'bonus' and spend all or most of the funds.

In order to test this notion, three Pennsylvania counties that received windfall payments were examined. Those included in the study were Clearfield, Greene, and Tioga Counties. Of the three, Clearfield County received the smallest payout relative to the size of the overall budget, while Tioga County received the largest. Greene County fell in the mid-range. Public officials familiar with Act 13 and its implementation of the impact fee were interviewed for the study. Officials were asked about various aspects of the windfall (e.g. size, anticipation, etc.) as well as the political context in which the

windfall payment decision-making process took place. In addition, archival materials including meeting minutes, county documents, and local reports on the funds published in local newspapers were reviewed as ancillary materials.

This study explores the hypothesis that the three counties would exhibit the behaviors described by the behavioral economists. More specifically, this study attempted to identify if a relationship between the size of the windfall and the propensity to consume existed. Counties with small payouts relative to the overall budget were expected to consume the windfall payment while counties with large payouts relative to the size of the overall budget were expected to save. Success in the application of such arguments may precipitate a shift toward behavioral economics and away from public finance in the evaluation of windfall payment decision-making. Such a success would build on the approach of Congdon et. al (2011) and others who emphasize the importance of behavioral economics in public sector decision-making and public policy (Congdon, Kling, & Mullainathan, 2011).

Results from the study of Clearfield, Greene, and Tioga Counties in fact supported the assertions made by the behavioral economists. That is, the size of the windfall was a determinant in the decision to spend or save the payment. Clearfield County, which received the smallest payment relative to the 2013 Operating Budget, intended to spend most of the windfall while Tioga County, which received the largest payment relative to the 2013 Operating Budget, intended to save most of the payment. Greene County, which received a medium-sized check in relation to Clearfield and Tioga Counties, intended to spend most of the windfall payment. Interviews revealed that

officials in Clearfield County largely perceived the payment to be a cash "bonus" with limited investment opportunities and thus spent the payment. Greene County considered the payment additional income and planned to use the payment to fund various projects. Only Tioga County considered the payment an endowment for the future.

Determining how governing bodies behave in the face of a windfall payment has important public policy implications, particularly in a jurisdiction with natural resource extraction. With economic risk and various negative externalities associated with resource extraction, the decision to spend or save revenue generated by Act 13 may have a significant impact on the health and viability of a community in the future. For these reasons, a normative argument in favor of saving all or part of the revenue in a legacy fund (also known as a permanent fund) already exists. If perceptions of the revenue preclude jurisdictions from saving, then policymakers may need to alter perceptions of the windfall in order to better prepare for and/or mitigate future impacts of natural resource extraction.

LITERATURE REVIEW

Before commencing the investigation of saving and expenditure patterns for revenue generated by Act 13, an understanding of the extraction of non-renewable resources, revenue capture, and windfall decision-making proves necessary. The following review of the literature identifies the attractiveness of non-renewable natural resource extraction as a means of generating wealth and revenue, describes the perils of relying on extraction for economic prosperity, explains negative externalities associated with extraction, and presents the two steams of thought relating to windfall decision-making processes.

Natural Resource Extraction in the Context of Economic "Boom" and "Bust" Cycles

Traditionally, resource extraction has been extolled as an opportunity rather than a liability for national, state, and local economies. Proponents of resource-based economic growth argue that states with significant resource endowments are able to overcome capital shortfalls as well as attract outside investment to initiate growth (Gunton, 2003; Ross, 1999). As a consequence of such investment and an associated increase in economic activity, individuals stand to gain from higher wages; firms stand to reap profits; and governing bodies have the opportunity to collect additional revenues and provide a higher level of public goods (Ross, 1999). Thus, resource extraction, on its face, may appear to be an advantageous economic growth strategy for communities with resource endowments. Given the potential for such benefits and the relative ease with

which resources can be extracted, Ross (1999) contends that resource-based growth represents a way for individuals, firms, and communities to 'get rich quick' (Ross, 1999).

The 'get rich quick' mentality manifests itself in the behaviors of firms, individuals, and governments to capture the rewards from the extraction of resources. That is, each player, in its own capacity, typically rushes to mine, drill, or otherwise extract natural resources for economic gain (Adamson, 2008). The rapid pace and large scale of resource extraction in communities led researchers to coin the term resource "boom" (Haefele & Morton, 2009). After decades of the promotion of resource extraction around the globe, however, a burgeoning body of literature suggests that sustained growth resulting from resource extraction is rare (Auty, 1993). Where there is a resource boom; there is an impending resource bust, which creates a cycle of economic highs and lows (Smith, 1986).

Resource busts occur in many cases just as rapidly as the initial resource boom. Factors which may lead to a bust include resource exhaustion, decreased demand for the resource, excess supply, or a combination of these (Graves, Weiler, & Tynon, 2009). The first factor, exhaustion, is the result of depletion of a particular resource (Gunton, 2003). Resources like coal, natural gas, and oil are finite, and depleting a resource in the short-term may preclude yields in the long-term. Additionally, if communities underestimate the total supply of a resource, depletion may occur more quickly than anticipated, leading to a resource bust. The second factor, decreases in demand, may lie beyond the control of a nation, state, or community, but has a negative impact on extractive activities nonetheless. In some instances, excess supply becomes a problem. Markets can be

flooded or saturated, thus decreasing the value of the resource. Decreases in demand or excess supply can turn extraction from a once profitable economic activity into an unprofitable one and force a nation, state, or community to shift, perhaps unexpectedly, toward other economic activities (Graves, Weiler, & Tynon, 2009).

The success of resource extraction, then, is highly dependent on the context in which extraction occurs. A resource bust may be attributed to resource exhaustion and/or unfavorable market conditions. After a bust, communities may choose to extract again when conditions (such as prevailing price for a resource) improve. Thus an economic boom and bust cycle emerges (Amundson, 1995). Historically, a number of resources have exhibited such a pattern (Weber, 2012). From coal to yellowcake (uranium), communities have boomed and busted across the United States and throughout the world (Amundson, 1995). If resources are finite, and extraction is prone to (often rapid) expansions and contractions, then a national, state, or community-wide dependence on extraction for economic vitality invites risk.

Research shows that dependence on extraction as an economic driver may negatively impact a community's long-term economic prospects (Haefele & Morton, 2009). Generally, other economic activities beyond the scope of resource extraction in a nation, state, or community experience stunted growth (James & Aadland, 2010; Headwaters Economics, 2008; Stevens, 2003). The propensity for resource extraction and resource dependence to translate into poor economic performance in other sectors in the present and the community in the future has even led some economists to deem resource extraction and associated profits a "curse" for national, state, and local economies (Auty,

1993). Determining exactly how resource dependence affects overall economic growth has spawned a vast body of literature, much of it with an international focus. In the literature, numerous factors or what Stevens (2003) deems "transmission mechanisms" emerge to explain the relationship between resource dependence and poor economic performance (Stevens, 2003). The transmission mechanisms discussed by Stevens and others include the 'crowding out effect' that resource extraction has on other industries, the price volatility associated with commodities, the transient workforce extraction typically attracts, localized inflation induced by extraction, and a tendency for communities to overestimate needs for expansion (Stevens, 2003).

The first mechanism, the crowding out effect, refers to the tendency of resource extraction to restrict economic diversity by 'crowding out' other industries. Researchers concluded that extraction has a "resource movement effect" on the overall economy (Corden & Neary, 1982; Headwaters Economics, 2011; Lemphers & Woynillowicz, 2012). The resource movement effect is defined as the tendency of extraction as the dominant industry to pull capital (human and/or physical) away from other industries in an economy (Corden & Neary, 1982). By pulling capital toward extraction, other industries may not be able to compete in the economy and may consequently shut down or avoid the market altogether. Such resource movement or re-allocation threatens an economy's overall economic diversity. Less economic diversity is associated with higher rates of unemployment and less employment stability in a community (Haefele & Morton, 2009). Moreover, when the resource bust occurs, communities are left with few viable economic alternative activities as a result of crowding out. Only a handful of

industries may exist to absorb the shock of the collapse of resource extraction (Haefele & Morton, 2009).

The second transmission mechanism is the price volatility associated with resource extraction. Prices for coal, oil, gas, and numerous other resources fluctuate in international markets. Thus, when commodity prices rise and fall, so too do the wages of workers and prices for goods and services at the site of extraction (Michaels, 2010). The greater the dependence on resource extraction, the higher the variability of prices may be. An entire economy, can hang in the balance of the prevailing price for a particular commodity. When yellowcake (uranium) prices dramatically dropped in the American West in the 1960s and 1970s, for example, the local economies of extraction towns were all but crushed (Amundson, 1995). Depending on a resource, which by its very nature fluctuates in value, may put an entire economy on unsound footing.

A burgeoning extractive industry not only draws labor away from other industries within an economy but also draws labor from elsewhere to the site of extraction (Graves, Weiler, & Tynon, 2009). Many workers opt to move to the community for a short time while others commute long distances on a daily basis (Adamson, 2008). The influx of extraction-oriented workers creates the potential for significant economic leakages from the local economy if workers stay only temporarily in the community or commute from outside (Jacquet, 2011). Thus, the economic benefits of resource extraction may not totally be reaped by those who live in the extraction community, as money ultimately ends up in the pockets of those who live elsewhere. Worker transience thus fails to bolster the resource extraction economy.

Also problematic for economies driven by resource extraction is localized inflation for long-time residents of extractive communities. As mentioned earlier, fluctuating commodities prices are reflected in local economies; high prevailing prices for coal, for example, may be reflected in higher wages and higher local prices for goods and services (Michaels, 2010). Complementing inflation induced by commodities prices is population growth in a community and subsequent increased demand for goods and services (Lemphers & Woynillowicz, 2012; Michaels, 2010; Weber, 2012). As a result of resource booms, communities thus face inflated prices. Most noteworthy in the literature is the change in rents and home values as a result of resource extraction. With new labor moving into the area, even if only temporarily, rents and home values typically skyrocket (BBC Research and Consulting, 2008; Yamaguchi & Kuczek, 1984). Suddenly what may have been an affordable place to live becomes unaffordable, particularly for those not engaged in extraction (Yamaguchi & Kuczek, 1984).

Finally, the literature suggests that in response to increased demand for local goods and services, communities often build up local amenities and infrastructure only to over-shoot long-run supply (Gunton, 2003). The over-shoot can be attributed to the influx of labor to communities with resource extraction. Because new citizens demand homes to live in, roads to drive on, and entertainment to enjoy, communities increase the supply of goods and services available (Adamson, 2008). With the resource bust, however, demand drops back to pre-boom levels (or below), turning the expansion into excess (Amundson, 1995). Consequently, communities are left with a glut of houses, restaurants, and

shopping malls—all of which typically have high, up-front, fixed costs that may not be recovered post-bust (Gunton, 2003).

While resource extraction may appear to be advantageous for local, state, and national economies, history shows otherwise. Turns toward natural resource extraction often initiate economic boom and bust cycles for economies. In addition, research suggests that a dependence on resource extraction may translate into poor, long-term economic performance because of the crowding out of other industries, price volatility, transient workforce, localized inflation, and infrastructural overshoots caused by extraction-induced expansion.

Negative Externalities of Natural Resource Extraction

In addition to the issues discussed regarding economic boom and bust cycles and long-term economic performance, natural resource extraction presents a number of negative externalities for extractive communities. That is, resource extraction may cause long-term economic problems as well as introduce additional negative externalities. Some of the externalities associated with extraction include: damage to community infrastructure, increased traffic and noise, a higher crime rate, and environmental degradation. As communities engage in resource extraction, one or any combination of these negative externalities may appear.

As previously mentioned, resource extraction may lead to over-shoots in infrastructural expansion. Communities expand under the assumption that economic growth through extraction will be sustained and expansions will be paid-off in the future.

Research shows that in addition to the new shopping malls, restaurants, and various other amenities that communities build for the growth spurred by extraction, significant damage is done to the assets the community already has (Christopherson & Rightor, 2011). Thus, extraction strains community resources as well as damages community infrastructure.

The tendency for resource extraction to strain community resources and cause infrastructural damage may be attributed to the capital intensive nature of resource extraction. Exploitation of a resource typically requires a sizable workforce (human capital) as well as heavy machinery (physical capital) (Wood & Ward, 2009). The intensity of extraction in terms of human capital contributes to strains in community services, as extraction attracts workers from outside of the community with higher wages, as discussed earlier (Graves, Weiler, & Tynon, 2009). With the influx of workers, demand for goods and services increases, straining community resources, including social services (Lockie, Franettovich, Petkova-Timmer, Rolfe, & Ivanova, 2009). Crime may rise, schools may become overcrowded, and medical services may prove inadequate. In response, communities must increase supply of these services to accommodate the influx of workers associated with resource extraction (Kassover & McKeown, 1981).

Similarly, because of the intensity of extraction in terms of physical capital, communities often face extensive damage to local infrastructure (Christopherson & Rightor, 2011). Governments in communities across the United States complain that increased traffic due to population growth as well as growth in commerce and construction associated with extraction put a strain on roads and bridges (Kassover &

McKeown, 1981). With hydraulic fracturing in Pennsylvania and Ohio for example, local governments are concerned that roads may not be able to sustain the loads of trucks traveling back and forth across communities to construct natural gas wellheads (Wood & Ward, 2009). Some of the drilling equipment involved in natural gas development weighs more than 100 tons, well above the carrying capacity of local roads and bridges (Wood & Ward, 2009). With overloaded trucks traveling to well sites numerous times a day, infrastructural damage is inevitable. Such concerns are not uncommon; infrastructural damage and concerns about the provision of services exist throughout extraction communities for a range of resources, from coal to uranium (Lockie, Franettovich, Petkova-Timmer, Rolfe, & Ivanova, 2009; Amundson, 1995).

In addition, resource extraction presents numerous negative environmental externalities. Some of these externalities include air pollution, soil erosion, and contamination of surface and groundwater (New York State Department of Environmental Conservation, 1992). Coal extraction serves as an example of each of these types of environmental degradation. Mining has been linked to air pollution in many extraction communities as dust from mines, stock piles, and carrying cars fill the air. Air quality in some cases may be so poor that residents in mining towns attribute chronic respiratory illnesses, such as asthma, to the mines (Lockie, Franettovich, Petkova-Timmer, Rolfe, & Ivanova, 2009). Furthermore, the mining process is a major cause of soil erosion and disruption of overland flows. With a disruption to overland flows, runoff increases, and water bodies become polluted (Lockie, Franettovich,

Petkova-Timmer, Rolfe, & Ivanova, 2009). Such degradation is not limited to coal mining but also associated with most extractive activities.

Valuation techniques for environmental costs are imprecise if not unreliable and often underestimate total environmental damage (Matthews & Lave, 2000). Complicating matters is the fact that at times, environmental damage is less visible and/or does not appear until years or even decades after extraction commences. Lower visibility of environmental damage may cause extraction communities to further underestimate total environmental costs. Underestimation may be occurring in Pennsylvania where hydraulic fracturing for natural gas takes place thousands of feet underground. Consequently, a flurry of debate in Pennsylvania regarding true environmental damage and its cost exists in the state.

With the potential for significant economic growth also comes the potential for significant infrastructural and environmental costs. Resource extraction may present an opportunity to 'get rich quick', but the long-term costs, as discussed here, in addition to the potential for poor overall economic performance in the long-run detract from the attractiveness of resource extraction as a spur for economic growth. The next section describes how communities capitalize on extraction to address these concerns.

Extraction and Taxation

Given the tenuous relationship between resource extraction and economic growth as well as the significant infrastructural and environmental costs imposed by extraction, maximization of the benefits of resource extraction becomes particularly important in

policy discussions (Congdon, Kling, & Mullainathan, 2011; Dixon, 2011). If resource extraction can be linked to poor economic performance, then some measure or set of measures are typically put in place to capture a portion of the economic gains in the present and use it to offset the inevitable bust. In addition, measures must be in place to address any additional burdens of resource extraction, such as infrastructural and environmental degradation (Widerquist & Howard, 2012). In the United States, the measure or set of measures typically adopted by policymakers to capitalize on extraction and address the burdens of extraction is taxation (Congdon, Kling, & Mullainathan, 2011; Dixon, 2011).

Many states that tax natural resource extraction have established a severance tax. The term "severance" refers to the fact that a resource is 'severed' from land or water. While severance taxes are levied on a variety of natural resources—including but not limited to coal, fish, natural gas, oil, and timber—energy producing states, particularly those with oil and gas endowments, receive the majority of total severance tax revenues (Richardson, 1999). Severance taxes are calculated in a variety of ways, depending on the state and the resource. Typically, coal, natural gas, and oil have a tax levied based on the volume of the resource extracted or as a percentage of market value (Richardson, 1999; National Conference of State Legislatures). The table below displays a number of tax schemes for natural gas in five states.

Table 2- Natural Gas Tax Schemes (Patton,, 2012)

State	Method of Collection	Severance Tax Rate
Colorado	Percentage of market value	2% of income up to $25K; 3% $25K - $100k; 4% $100K - $300k; 5% over $300k
Louisiana	Cents-per-thousand cubic feet	16.4 cents per MCF
New Mexico	Percentage of market value	3.75%
North Dakota	Cents-per-thousand cubic feet	4 cents per MCF
West Virginia	Percentage of market value	5.0%

As shown in the table, Louisiana and North Dakota levy a severance tax on natural gas based on volume at rates as high as 16.4 cents and as low as 4 cents per million cubic feet (mcf), respectively. Others, like New Mexico and Colorado, tax based on a percentage of market value as high as 7.5 percent and as low as 2 percent, respectively (Patton, 2012). The structure of severance taxes is quite diverse, even in just these five states. Greater diversity exists between resources, with states adopting one or multiple methods of taxation for one or multiple resources.

The severance tax is an attractive option for policymakers in extractive communities. Perhaps most attractive is the fact that severance taxes are conducive to tax exportation—that is, passing a portion of the overall tax burden in a state along to consumers of a particular resource outside of the state (Patton, 2011). In other words, severance taxes are not necessarily paid by the firms and citizens engaged in extraction but shifted to consumers of the resource (outside) of the community. Because of the potential for tax exportation, severance taxes often prove more politically feasible than

other taxes, such as the property tax, which is collected from state residents only (Shelton & Morgan, 1977).

While the severance tax is popular among resource extraction states, other means of collecting revenue are used in conjunction with or in lieu of the severance. Some of the most common alternative methods of collection include the imposition of real property tax, personal property tax, and/or corporate income tax (Kent & Eastham, 2011). Like the severance tax, however, the levies on extraction vary by resource and state, creating a diverse landscape of tax structures throughout the United States.

The first of these alternative methods, the real property tax, is a tax levied on a resource based on ownership. The tax may combine or separate the value of a resource with the value of surface land. In other words, landowners may pay a property tax based on the value of a resource in addition to a tax on the value of surface land or landowners may pay one property tax which combines both values (Kent & Eastham, 2011). Furthermore, the rate of taxation (combined or separate) may be contingent on the state of production. That is, if extraction is or is not actively taking place (Kent & Eastham, 2011).

The second alternative method is the personal property tax. The personal property tax in relation to resource extraction is levied on the machinery or equipment involved in the extraction process. West Virginia, for example, uses three methods to measure the value of equipment involved in coal production, averages the values, and then assesses a tax on 60 percent of the average (Kent & Eastham, 2011). Such a tax, however, is highly dependent on the assessed value of such equipment. The third alternative method is the

corporate income tax or commercial activity tax which is levied at a simple rate on corporations involved in the production and sale of the resources extracted (Kent & Eastham, 2011).

While taxes are a useful way to address negative externalities and capitalize on a resource that is finite, the generation of revenue from taxes is contingent upon the production of the resource. Therefore, when resource yields decline either due to decreases in supply or demand, so too does the revenue generated from extraction. For this very reason, taxation is an imperfect tool for policymakers (Dixon, 2011). And while other policy tools including restrictions and quotas on production exist, a discussion of taxation and other similar schemes, such as the severance tax/impact fee hybrid established by Pennsylvania (discussed later on), proves most applicable in the United States (Widerquist & Howard, 2012). Having established the ways in which communities capitalize on extraction through taxation, the remaining sections address the expenditures of these revenues by governing bodies.

Natural Resource Revenue as a 'Windfall'

The fields of public policy and public finance suggest that revenue generated by natural resources are a financial windfall for states, counties, and municipalities engaged in natural resource extraction (Widerquist & Howard, 2012). Widerquist and Howard (2012) explain that revenues from natural resources are a windfall in the sense that they are difficult to forecast—as a result of factors such as commodity price volatility—and in the sense that they are temporary—there is almost always an impending resource bust. It

is thus the uncertainty associated with these funds that causes many to consider them a 'windfall' rather than a dependable source of revenue (Wilson & Sylvia, 1993). These windfalls may be saved or spent. If spend, the funds may be used to address the externalities or costs associated with extraction, or for a host of other uses.

With an understanding that revenues from resource extraction are a windfall for governing bodies, a review of the literature concerning windfall revenue spending and saving is necessary. Saving and expenditure patterns for natural resource revenues have been well documented, though mostly for countries other than the United States. Specifically, much of the literature on the topic focuses on the policy decisions of governing bodies in the Developing World. A number of these studies conclude that expenditure of windfalls in their entirety are quite common and are often associated with vast expansions in the public sector (Robinson, Torvik, & Verdier, 2006; Talvi & Vegh, 2005). In contrast, few works have examined natural resource revenue windfall expenditures in the United States (Wilson & Sylvia, 1993).

Windfall policy examinations in the United States more often deal with topics such as state lotteries, unexpected increases in general tax revenue and more recently, tobacco master settlement agreements (Sloan, Carlisle, Rattliff, & Trogdon, 2005; Miller & Pierce, 1997; Levine, Rubin, & Wolohojian, 1981). All of these policy exmainations fall within a stream of literature borrowed largely from the field of public budgeting. This stream emphasizes various agents or actors in the decision-making process as well as the political, economic, and social circumstances surrounding the process. A very different stream, adapted from the field of behavioral economics, emphasizes the size of windfall

payments as a key determinant of the propensity to spend such payments. The next two sections describe each of these streams of literature and their implications for windfall decision-making.

Insights from Public Budgeting: The Context of Windfall Decision-Making

Much of the literature exploring windfall payments suggests that the decision-making process regarding whether to save or spend a windfall does not significantly differ from the decision-making process associated with non-windfall revenue. Despite disagreement in the field of public budgeting regarding incremental budget changes and the Punctuated Equilibrium Model (PEM)[2], policy examinations with specific reference to windfall payments suggests that the decision-making process is highly influenced by various agents or actors and external factors, such a fiscal stress or social unrest.

The 'politics'-based approach to public budgeting was advanced by Levine et. al (1981) in a study of municipalities under fiscal stress during the 1970s. In that study, the researchers concluded that lobbyists, interest groups, and public officials as well as economic and political circumstances influenced budget decision-making (Levine, Rubin,

[2] The field of public budgeting, particularly in recent years, has been dominated by the two broader theories of incrementalism and punctuated equilibrium (Zhao, Ren, & Lovrich, 2010). The theory of incrementalism posits that changes from year to year in public budgets are small, due in part to tradition and in part to the complexity of the decision-making process (Holcombe, 2006). A slight departure from incrementalism, the theory of the punctuated equilibrium (also known as the punctuated equilibrium model or PEM), contends that annual changes to a budget are small or incremental in the majority of cases; however, occasional, radical shifts or punctuations occur from time to time (Arnett, 2012). A windfall payment may represent punctuation or a departure from the budgeting norm. These theories do not shed much light on the present question, since they attempt to explain changes in level rather than type of expenditure. Indeed, Levine et. al (1981) contend that even during punctuations the budgeting process remains the same.

& Wolohojian, 1981). Studies concerning tobacco master settlement agreements in the 1990s and 2000s made similar conclusions (Sloan, Carlisle, Rattliff, & Trogdon, 2005). Research examining expenditure patterns for the settlement payments, specifically concludes that decisions are highly influenced by lobbyists, interest groups, and state fiscal health. Several other works echo the claims of Levine et. al (1981) and Sloan et. al (2005) including Garrick et. al (2009), Jordan (2003) and Cutler et. al. (1993) (Garrick, Johnson, & Neiman, 2009; Jordan 2003; Cutler, Elmendorf, & Zeckhauser, 1993).

A set of studies similar to those above draws more specific conclusions about which public officials, lobbying groups, and citizens have the potential to significantly influence how windfall revenue is spent. These same studies shed light on the importance of the context in which the decision is made, such as the economic and/or political climate surrounding the process. The following sections identify and describe the actors and factors which prove most pertinent as identified by the literature.

Actors Involved in the Budget-Making Process

The politics-based approach advanced by Levine et. al (1981) and more recently Sloan et. al (2005) identify citizens (or voters), elected officials, and interest groups/lobbyists as the most influential actors in the budget-making process (Levine, Rubin, & Wolohojian, 1981; Sloan, Carlisle, Rattliff, & Trogdon, 2005). Depending on the level of engagement of each of these actors, policy outcomes and budgetary decisions vary. Consequently, the decision to save or spend a windfall depends not only on who is involved in the process but also how each actor is involved.

The first of these actors, the citizen within the community, may have the opportunity to participate in the budget decision-making process. Whether through council meetings, public hearings, special sessions, or elections, citizens articulate their preferences for budgetary decisions. Budgetary preferences are at least partially based on the self-interest and knowledge-base of each individual citizen (Mantzavinos, 2004). Therefore, citizens engaged in the decision-making process are prone to advocating for program funding which benefit themselves. Conversely, citizens may argue against programs which benefit them least. The relationship between the self-interested behaviors of citizens and budgetary preferences has been documented. In a study of elderly residents in a community, for example, Cutler et. al (1993) found that the elderly were less likely to support spending on schools than other segments of the population because they were least likely to benefit from the services schools provide (Cutler, Elmendorf, & Zeckhauser, 1993). In a situation in which unallocated funds appear, such as with a revenue windfall, various actors within the community come forward to request the funds for preferred programs and policies (Levine, Rubin, & Wolohojian, 1981). Thus, an understanding of which individuals or blocs of voters engage in the budget decision-making process may elucidate the preference to save or consume the windfall payment.

Also important are the elected officials in a jurisdiction who act as agents for voters both engaged and disengaged from the budget-decision making process. While Sloan et. al. acknowledge that elected officials may exercise considerable latitude in budgetary judgments, future electability is deemed an important factor in weighing decisions (Sloan, Carlisle, Rattliff, & Trogdon, 2005). In their study of public budgeting,

Wilson and Sylvia (1993) argue that the budget decision-making process is a tool employed by politicians to reinforce a politician's own base of power and/or to serve the needs of a politician's own constituents (Wilson & Sylvia, 1993). Budget decisions, then, are at least partially a function of political self-preservation. Even when not explicitly politically driven, budget decisions tend to favor the individuals or groups closest to politicians (Kyu-Nahm, 2012). This tendency for budgets to benefit those closest to a public official is referred to by Kyu-Nahm (2012) as the 'parochial' tendency of budget decision-making (Kyu-Nahm, 2012). Examining the behaviors of politicians involved in the process and identifying the interests they represent may help to explain if natural resource windfalls are spent or saved. Politicians may find a windfall to be an excellent opportunity to reinforce their base of power.

Finally, Sloan et. al argue that lobbyists and interest groups play a significant role in budget decision-making (Sloan, Carlisle, Rattliff, & Trogdon, 2005).The role of the interest group may be defined as either electoral or influential. The electoral role is characterized by public support of a candidate or a position (typically financial in nature). The influential role is characterized by education or dissemination of information regarding a candidate or position. Thus, in the realm of budgetary choices, a lobbying group may use resources to financially support a politician or budget initiative or merely use resources to inform the public about the decision at hand. Identifying the interest groups and lobbyists that emerge in the procsss may help to explain jurisdicitions' decision to save or spend the revenue.

As stated earlier, in considering the influence of actors in the decision-making process one must not only examine which actors are involved but also how actors are involved. The previous discussion of lobbyists provides a very specific description of the ways in which these groups become engaged. Jordan (2003) more broadly defines such behaviors, whether adopted by lobbyists, individuals or elected officials as political mobilization (Jordan, 2003). Political mobilization may be defined as the process by which actors reach out to the public or are reached out to by a particular group (Jordan, 2003). Jordan (2003) posits that individuals, elected officials, and lobbyists aligned with certain interests are typically more successful in political mobilization than others (Jordan, 2003). Actors associated with services such as police, fire, and sanitation are most likely to be successful whereas the actors associated with services such as parks, recreation, and highways are least likely to be successful (Jordan, 2003). Those groups or individuals who evoke a public outcry on their behalf are most likely to mobilize public support in the budgeting process and in turn secure funding. By highlighting the threat of crime, an inability to fight fires, and overflowing garbage, for example, actors associated with police, fire, and sanitation create enough of a public outcry to influence budgetary decisions. Political mobilization by various groups or individuals could induce spending of the windfall on additional or supplemental public goods.

Citizens, politicians, and lobbyists use political mobilization to influence budgetary decisions. In order to understand how jurisdictions behave when given a windfall payment, analysis of these various actors and political mobilization is necessary. Thus, determining how or if citizens or lobbyists were involved in the decision-making

process could provide valuable insights. Only by coupling an understanding of who was involved in the process with an evaluation of the atmosphere or context in which the decisions are made can behaviors be ascertained.

The Context of Budget-Making

Equally important as the actors in the decision-making process is the context in which decisions are made. In the literature concerning public budgets and more specifically windfall payment spending, intergovernmental funds and fiscal stress as well as social/political discontent are critical in defining the context in which budgets are made. In addition, environmental literature proposes that the perception of long-term sustainability and a concern for the environment in a community may significantly influence a jurisdiction's decision to spend or save the funds. The following is a discussion of each of these contextual influences.

In terms of the context of budget decision-making, Levine et. al (1981), Hite and Ulbrich (1986), and Jordan (2003) argue that actions taken by upper-level governmental bodies may have a significant influence on budgetary decisions for state and local governments. In other words, budget changes made by one branch or level of government may precipitate a change in other parts (Jordan, 2003). In many cases such a relationship exists because of the shared burden of revenue collection and provision of services between various levels of government (Hite & Ulbrich, 1986). To be more specific, because local, state, and national governments share revenues from various taxes and share the costs of various services, if one level of government stops payment on a

particular service or cuts a particular tax, that stop payment or tax cut may force another level of government to pick up the budgetary slack. If the windfall payment is received in an atmosphere of inter-governmental budget cuts, the likelihood that the windfall payment is spent to mitigate those cuts is significant.

Changes in spending by various levels of government may put a strain on the financial resources of a jurisdiction. That is, the actions of other governmental bodies may cause a community to experience fiscal stress, a component which Arnett (2012) argues is paramount in the discussion of the context of budget decision-making (Arnett, 2012). For the budget outcomes in communities in times of fiscal calamity may differ greatly from those in times of fiscal soundness. Before identifying the relationship between fiscal stress and expenditure patterns, however, one must first determine an appropriate definition of 'fiscal stress'. Arnett (2012) provides a survey of the literature on this topic and concludes that no common definition of the term exists, though in its broadest form, fiscal stress may be defined as a "case of expenditures exceeding available financial resources" (Arnett, 2012, p 60). For a more precise definition, however, Arnett (2012), cites Kloha et al. (2005) and comments that fiscal stress may be representative of a "a failure to meet standards in areas of operating position, debt, and community needs and resources over successive years" (Arnett, 2012, p 60). In short, communities experience fiscal stress when they have too many bills and too few resources to pay them.

In response to fiscal stress, states typically attempt to reduce spending, increase revenue, implement efficiency gains (provide the same services for less money), or transfer funds between accounts (tap into rainy day funds) (Arnett, 2012). The array of

these responses is typically referred to as 'fiscal retrenchment' (Levine, Rubin, & Wolohojian, 1981). Fiscal retrenchment may be generally characterized as a process which moves from revenue enhancements, to efficiency increases, to service reductions (Pammer, 1990). That is, jurisdictions typically attempt to raise new revenue and if that fails, jurisdictions move toward making services more efficient before resorting to service cuts. Past studies reveal a clear preference of jurisdictions to increase efficiency rather than reducing service levels (Levine, Rubin, & Wolohojian, 1981). However, since 2001 a shift toward the cutback management paradigm, which includes across-the-board and targeted cuts, has emerged (Arnett, 2012).

Fiscal stress may create an atmosophere of uncertainty and/or prudence during budget negotiations. Thus, fiscal stress, either real or perceived, becomes an important factor in defining the context in which windfall payment decisions are made. If upper-level budget cuts are made or an economic contraction occurs, then a community with a resource revenue windfall may choose to use the windfall to compensate for the budget cut or economic contraction. Thus, windfalls present jurisdictions with the additional funds needed to weather the storm of fiscal stress.

Jurisdictions do not always experience fiscal stress, however. In fact, communities may experience periods of expansion. During times of such expansion, jurisdictions may offer a host of new or additional services and/or benefits for citizens (Levine, Rubin, & Wolohojian, 1981). Levine et. al (1981) cites New York City as a prime example. A period of rapid economic growth in New York City translated into a number of revenue windfalls in the 1960s . Such windfalls led to a significant expansion

of services offered in hospitals and higher education as well as a significant increases in the salaries and benefits offered to public employees (Levine, Rubin, & Wolohojian, 1981). During this time, such expansions were made with short-term solvency in mind (which helps to explain the impending fiscal stress post-expansion) (Levine, Rubin, & Wolohojian, 1981). Short-term versus long-term prospects aside, a community on economically sound footing may interpret a resource revenue windfall as an opportunity to expand servcies and benefits. Therefore, a windfall payment may be spent rather than saved in order to augment funds and establish new or additional programs.

In addition to governmental interactions and fiscal health, a discussion of the context of budget-decision making for resource revenue windfalls requires an analysis of the social dynamics in a jurisdiction. Levine et. al (1981) mentions the propensity for social dynamics or movements to effect budget decisions. In the analysis of New York City, for example, Levine et al. acknowledge that social unrest at least partially affected budget decisions during the 1960s (Levine, Rubin, & Wolohojian, 1981). A survey of the body of social research on resource extraction communities suggests that social change in resource extraction communities is great (Adamson, 2008). One might expect for such changes to frame, at least in part, the decision-making process.

Survey research conducted in resource extraction communities identifies a number of physical and social changes which develop as a result of resource extraction. Most of these changes elicit a negative response from community members. Some of these problematic changes include: increased demand for public services, increased perception of social isolation, increased levels of crime, and stresses on infrastructure, as

discussed earlier (Lockie, Franettovich, Petkova-Timmer, Rolfe, & Ivanova, 2009; Brown, Dorius, & Krannich, 2005 Lewis, 1993). Many of these changes have come to the forefront of social debate in resource extraction communities and have created an atmosphere of unrest (Brown, Dorius, & Krannich, 2005). If social or political discontent exists, apart from political mobilization already discussed, a jurisdiction may choose to spend the funds rather than save them to address these issues.

Finally, one must have an understanding of the environmental context in which budget decisions are made. For budget decisions may be heavily influenced if not dictated by a jurisdiction's concern for the environmental changes induced by extraction. Similarly, the decision to spend the funds may be dictated by the prevailing concern or lack thereof for environmental costs. Much of the literature on this topic comes from outside of public budgeting but proves germane nonetheless.

As discussed earlier, widespread concern regarding the environmental changes induced by extraction has been documented in the social research on extraction communities (Lockie, Franettovich, Petkova-Timmer, Rolfe, & Ivanova, 2009). Residents in extraction communities often link extractive activity to air and water quality issues once extraction has commenced (Lockie, Franettovich, Petkova-Timmer, Rolfe, & Ivanova, 2009). While community surveys in extraction communities have not specifically addressed citizen mobilization to address environmental concerns, a body of environmental literature suggests that in cases in which the visibility of sources of pollution (e.g. mills, mines, rigs, etc.) as well as signs of environmental degradation (e.g. polluted water, foul smells, etc.) is high, mobilization to address environmental concerns

is common (Gould, 1993). Important to note, however, is that signs of environmental degradation are not always immediate (Matthews & Lave, 2000). Years may pass before damage becomes apparent (Vianna & Polan, 1984). Therefore, mobilization may be significantly delayed. Drawing from the environmental literature, one might expect that in extraction communities, where pollution is often conspicuous, citizens will mobilize and demand public action to address environmental concerns. Such public action may be reflected in the budget of the jurisdiction and/or the use of windfalls derived from resource extraction.

A community's awareness of environmental cost also helps to define the context in which budgeting decisions are made. That is, the extent to which residents are aware of environmental costs and ways in which communities estimate environmental damage influences budget decision-making. For a community familiar with or understanding of the costs of clean-up from extraction (or other natural disasters) may be more willing to save part or all of the revenue to mitigate such impacts. Literature on economic loss and the environment suggests that communities, states, and nations are often unaware or have difficulty assessing the costs of environmental damage (Committee on Assessing the Costs of Natural Disaster, 1999). Frequently, communities underestimate costs of disasters, such as earthquakes and oil spills, and estimates skyrocket over time (Petak & Elahi, 2001). Furthermore, communities often fail to appreciate the indirect costs of environmental damage (Kreiser, Sirisom, Ashiabor, & Milne, 2011). In an oil spill, for example, citizens anticipate a loss for fishermen, but often underestimate the loss for beachfront property owners, tourism, and recreation (Goldberg, 1994). Identifying the

level of concern for environmental cost thus becomes important in defining the context of the windfall payment decision-making process.

In sum, resource revenue windfalls represent an opportunity for jurisdictions to depart from the incrementalism typically associated with the budget-making process. Actors or agents in a jurisdiction may coalesce or politically mobilize to deter saving, induce spending, and capture a portion of the windfall. Simultaneously, various other factors, namely intergovernmental budget cuts, fiscal stress, social unrest, and environmental consciousness may also dictate whether a jurisdiction saves or spends the windfall payment. By applying the approach outlined in this stream of literature pertaining to windfall payments, one may be able to anticipate the behaviors of jurisdictions in Pennsylvania facing a windfall payment from Act 13.

Insights from Behavioral Economics: Windfall Size and the Propensity to Consume

A second stream of literature specifically focused on windfall gains predates the work of Levine et. al (1981) and other researchers in the field of public budgeting. Early works from this alternate stream first examined the simple decision of individuals to spend or save windfall payments. The results from these early works indicated that individuals were no more likely to spend windfall payments than income (Reid, 1962). Research conducted since has had mixed results, with some researchers finding a noticeable correlation between windfall payments and consumption. Some studies suggest windfall payments are consumed greater in proportion to income, and others find a spurious relationship (Bodkin, 1959; Kreinin, 1961).

In 1985, Keeler et. al (1985), building on the work of Landsberger (1966), attempted to reconcile the inconsistencies in the literature by suggesting that windfalls are often consumed in proportion to the size of the windfall to an individual or household's total income (Keeler, James, & Abdel-Ghany, 1985; Landsberger, 1966). In other words, individuals are generally more likely to spend windfalls that are small in proportion to income and save those that are large in proportion to income. Keeler et. al (1985) reason that transaction costs involved in saving a small windfall (e.g. brokerage fees, credit arrangements, etc.) discourage saving and encourage spending (Keeler, James, & Abdel-Ghany, 1985). Transaction costs per dollar decrease with larger windfalls and thus individuals are more inclined to save. Specifically, Keeler et. al suggest a series of thresholds for saving and spending the windfall payment (Keeler, James, & Abdel-Ghany, 1985). When a windfall payment is below 20 percent of total income, saving does not typically occur. Between 20 and 40 percent, windfalls are saved or spent as if they were normal income. Above 40 percent, noticeable saving becomes apparent (Keeler, James, & Abdel-Ghany, 1985).

The works of Thaler (1985), Shefrin and Thaler (1988) and Milkman et. al (2007) offer an alternative explanation as to why individuals are inclined to spend smaller windfall payments. According to the "mental accounting" model advanced by Thaler (1985), Shefrin and Thaler (1988) and Milkman et. al (2007), individuals establish various "mental accounts" designated for spending or saving. Under this model, individuals typically place small, one-time windfall gains in a "mad money" account to

spend frivolously (Clark, 2002). Conversely, large income gains are placed in more stringently regulated mental accounts.

The stringency or laxness with which mental accounts are regulated is a result of the prevalence of non-fungibility in the mental accounting system. Congdon et. al (2011) explain that in the mental accounting system, individuals fail to treat income equally across all accounts (Congdon, Kling, & Mullainathan, 2011). Thus, individuals may value earned money, from a paycheck for example, more than found or extra money, such as that from a windfall. In an experiment conducted by Arkes et. al (1994), researchers found that participants who received a small windfall of $3-5 used the funds as 'other money' while gambling rather than spending their own funds (Arkes, Joyner, Pezzo, Nash, Siegel-Jacobs, & Stone, 1994). Lesser valued funds or funds that are seemingly easier to part with form mental "mad money" accounts. Windfall payments, which may be perceived as unearned, are therefore deposited into such accounts where they are more often spent than saved (Clark, 2002).

It is important to note that the frequency of windfalls is relevant to the decision to spend or save. Keeler et. al (1985) qualify their results by stating that savings become apparent in the face of repeated gains. Thus, the inclination to spend a small windfall may disappear when a payment is received multiple times (Keeler, James, & Abdel-Ghany, 1985). Other researchers have similarly qualified the findings of Keeler et. al (1985) by emphasizing the importance of anticipation in the decisions of individuals to save or spend windfall payments. In other words, individuals who become aware of a windfall

and have substantial time to contemplate uses are less likely to spend the funds outright (Arkes, Joyner, Pezzo, Nash, Siegel-Jacobs, & Stone, 1994).

The qualifications made regarding repetition and expectations present a potential flaw in the application of this stream of literature to windfall payments for natural resources. Jurisdictions in fact typically receive payments over multiple years and are aware that payments will come. However, as mentioned earlier, a great deal of uncertainty still remains tied to natural resource windfall payments (Widerquist & Howard, 2012). The number of times a payment will be repeated is unclear as the sustainability of extraction is questionable. The size of the payment is also uncertain, as commodities fluctuate a great deal on the market in terms of supply, demand, and price. Thus, although jurisdictions anticipate a windfall, estimations of the size of the windfall still remain imprecise. Anecdotal evidence from Pennsylvania supports this notion as estimations of the size of the windfall payments fluctuated over a period of several months for many municipalities. Despite the fact that the law was passed in February 2012, estimations of payouts were still to be negotiated as recently as January 2013.

Also important to note is the fact that this stream of research on windfalls largely ignores external factors in the decision-making process. That is, many other factors which may influence an individual's decision are controlled for. For example, socio-economic status, age, and/or employment play little if any role in the discussion of the propensity to save or spend for individuals. Only the size, frequency, and anticipation of the windfall prove pertinent. If extended to a jurisdiction rather than just an individual or household,

many of the factors and actors identified by the other stream of literature are not taken into account by the behavioral economics stream.

More to this end, this stream of research has been limited predominantly to individuals or households and has not been applied to public finance. Talvi and Vegh (2005) reviewed a number of studies which have reached beyond the scope of the individual and the household, though much of the research has been international in scope with a focus on developing economies (Talvi & Vegh, 2005). Works reviewed by Talvi and Vegh (2005) equate individual or household income to the size of a nation's budget. The works generally indicate a high propensity to consume windfall revenues regardless of the proportional size of the revenue to the overall budget (Talvi & Vegh, 2005).

As a largely simplified approach to windfall budget decision-making, this stream of literature focuses exclusively on the size of a windfall payment as a key determinant in the propensity to spend or consume a windfall. Extended to public budgets, rather than examining the 'actors' and 'factors' in the budgeting process, this stream of literature proposes a focus on the size of the revenue in proportion to a jurisdiction's overall budget for insights. A jurisdiction with a large windfall which represents a sizable proportion of the overall budget may save more than a jurisdiction with a small windfall which represents a small proportion of the overall budget.

This study attempted to test the assertions of this second stream of literature by examining three counties in Pennsylvania that received windfall payments from natural gas revenue. The windfall size in proportion to overall budget varied between the three

counties to observe differences in behavior as expected by the behavioral economic approach described here. Successful application of this stream to the public arena may precipitate a turn away from the public budgeting toward behavioral economics. Before completing this analysis, however, a description of the law, Act 13, which established the impact fee, is necessary.

Act 13 and Natural Gas in Pennsylvania

The rapidity with which Pennsylvania has pursued natural gas extraction is characteristic of the "boom" discussed earlier in the review of the literature. Because of this similarity, the relative infancy of the industry, and the passage of a recent bill establishing a fee on natural gas extraction, Pennsylvania proves to be an excellent case to examine the decision-making process for resource revenue windfalls. Before addressing jurisdictions' decisions to save or spend the windfall, however, a discussion of natural gas and the structure of Act 13, the legislation which established the fee on natural gas extraction in Pennsylvania, proves necessary.

Pennsylvania's endowment of natural gas is a part of the Marcellus Shale Formation, a sedimentary rock formation which lies beneath eastern Ohio, northern West Virginia, western Maryland, western and northeastern Pennsylvania, and southern New York (Andrews, et al., 2009). The formation contains an estimated 12 trillion cubic feet (tcf) of natural gas, with most of the recoverable gas found in Pennsylvania (Andrews, et al., 2009). Production of natural gas in Pennsylvania from unconventional wells began in earnest in 2008 with approximately 200 wells in operation by year end (Andrews, et al.,

2009). Since then—drilling has grown exponentially, with nearly 9,000 unconventional natural gas wells in operation in 2012 (State Impact, 2012).

In February 2012, the state legislature of Pennsylvania passed Act 13, a law which represented a complete overhaul of natural gas policy in the state (State Impact, 2012) . Most notably, the legislation established permitting regulations for natural gas wells, addressed zoning and land use concerns relating to natural gas extraction, and provided for an unconventional gas fee (Act 13, 2012). Since its passage, the legislation has met contention. Arguably, the most controversial components of the law are the zoning and land use measures. Opponents of the measures argue that the legislation limits the power of local governments to regulate the siting of wells and ignores local land use decision-making processes (State Impact, 2012). Strong opposition to the measures consequently resulted in a challenge to the legislation in the State Supreme Court.

For the purposes of discussing windfall payment decision-making, the impact fee provision proves most pertinent. Per Act 13, each well drilled in the state is subject to a fee for a maximum of 15 years. The fee follows a graduated or bracket system with the bracket of each well determined by the annual prevailing price of natural gas per cubic foot adjusted by the Consumer Price Index (see Table 2 below). If, for example, the annual average prevailing price of gas is $2.25 or less (the lowest bracket) per cubic in the first year of production for the well, the fee collected is $40,000. If the average annual price of gas remains $2.25 or less, the fee is reduced in the second year to $30,000. When the average annual price of gas increases, however, wells move to a higher bracket and the fee increases. Consequently, revenue generation per well is dependent on both the

age of the well and the annual prevailing price of natural gas. Such a system introduces the potential for significant revenue variability.

Table 3- Impact Fee Structure of Act 13 (County Commissioner's Association of Pennsylvania, 2012)

Year of Production	Average Gas Price				
	< $2.25	$2.25 - $2.99	$3.00 - $4.99	$5.00 - $5.99	> $5.99
Year 1	$40,000	$45,000	$50,000	$55,000	$60,000
Year 2	$30,000	$35,000	$40,000	$45,000	$55,000
Year 3	$25,000	$30,000	$30,000	$40,000	$50,000
Years 4-10	$10,000	$15,000	$20,000		
Years 11-15	$5,000		$10,000		

The fee is administered and collected at the state level by the Public Utility Commission (PUC). Once the fee is collected, monies are aggregated in the Unconventional Gas Well Fund which is administered by the PUC. After collection, a portion of the funds are allocated to county conservation districts, the Pennsylvania Fish and Boat Commission, the Pennsylvania Emergency Management Agency, the State Fire Commissioner, the Department of Transportation, the PUC, and the Marcellus Legacy Fund (Act 13, 2012). The Marcellus Legacy Fund, as established by the law, may use the funds to exclusively address orphan and abandoned well plugging, repair or replacement of at-risk bridges, and/or establish greenways and open space (County Commissioner's Association of Pennsylvania, 2012). In sum, approximately 40 percent of the revenue collected is allocated to these statewide agencies. The remaining 60 percent is allocated to counties and municipal governments. Counties with natural gas wells receive the majority of the funds, though counties without wells but adjacent to production still receive a portion of the revenue. Funds are not automatically disbursed to counties

however; county commissioners were required to vote in 2012 to authorize the PUC to collect the fee and disburse the funds. The amount disbursed to each jurisdiction may not exceed $500,000 or half of the budget for the prior fiscal year, whichever is greater. With such a cap in place, the potential for unallocated revenue at the state level exists. The law stipulates that if unallocated revenue remains, it is to be retained by the commission and deposited in the Housing Affordability and Rehabilitation Enhancement Fund (Act 13, 2012).

Expenditures by the counties and municipalities are limited to thirteen "spending categories" defined by the legislation. These categories include but are not limited to uses such as the "preservation and reclamation of surface and subsurface waters and water supplies; projects to increase the availability of safe and affordable housing to residents; and tax reductions including homestead exclusions" (Act 13, 2012). One of the "spending categories" is actually a capital reserves fund. Thus, all or part of the payment can be saved using this category. Counties and municipalities are responsible for filing a "fund usage report" with the Public Utilities Commission by May of 2013 and every subsequent spring. The revenue must be allocated in any combination within the categories listed on the report (Act 13, 2012).

Table 4- Spending Categories Under Act 13

CATEGORY	AMOUNT (rounded to the nearest hundred)
1. Construction, reconstruction, maintenance and repair of roadways, bridges and public infrastructure.	
2. Water, storm water and sewer systems, including construction, reconstruction, maintenance and repair	
3. Emergency preparedness and public safety, including law enforcement and fire services, hazardous material response, 911, equipment acquisition and other services	
4. Environmental programs, including trails, parks and recreation, open space, flood plain management, conservation districts and agricultural preservation	
5. Preservation and reclamation of surface and subsurface waters and water supplies	
6. Tax reductions, including homestead exclusions	
7. Projects to increase the availability of safe and affordable housing to residents	
8. Records management, geographic information systems and information technology	
9. The delivery of social services	
10. Judicial services	
11. Deposit into the municipality's capital reserve fund if the funds are used solely for a purpose set forth in Act 13 of 2012	
12. Career and technical centers for training of workers in the oil and gas industry	
13. Local or regional planning initiatives under the act of July 31, 1968 (P.L. 805, No. 247), known as the Pennsylvania Municipalities Planning Code	
TOTAL	

The requirement that counties and municipalities report the allocation of funds within thirteen state-sanctioned categories lays the groundwork for an analysis of the decision-making process. In other words, the nature of the law and its record-keeping requirements should preclude the funds being lost in the general budget for counties in municipalities in the state. Thus, Pennsylvania provides an excellent opportunity to examine decision-making processes for resource revenue windfalls, as county

governments must consciously make decisions as to whether they will save or spend the funds within a given period of time.

RESEARCH HYPOTHESIS

Given the context of the "boom" and "bust" cycle, a potential for stunted long-term economic growth, and the negative externalities (e.g. environmental degradation, infrastructural stress) associated with natural resource extraction, identifying the spending and savings patterns for natural resource windfall payments becomes an important policy issue. Such funds should be (at least partially) saved, arguably in order to prepare a municipality for the impending economic "bust" expected with extraction. It is uncertain to what extent the funds will actually be spent or saved, however. Literature regarding windfall payments exists in two streams, both of which help to elucidate potential behaviors of jurisdictions facing windfall payments. One suggests that the decision to spend or save a windfall is influenced by the actors involved in the decision-making process as well as numerous external circumstances, such as environmental consciousness and fiscal stress. Thus, identifying who and what is involved in the decision-making process proves informative in identifying spending and saving behaviors. The other stream largely disregards these actors and factors and focuses primarily on the size of the windfall proportional to overall budget. This stream suggests that smaller windfalls will be spent while larger windfalls will be saved. Researchers in this stream attribute such a propensity to the ways in which decision-makers perceive the windfall. Both streams have potential applicability to the natural gas impact fee funds in Pennsylvania.

This study attempted to test the notion advanced by the latter stream, which argues that windfall size in proportion to total budget is related to a county's propensity to consume the payment, while still taking account of the context in which the decision was made. Following the logic of this stream of literature, counties with a large payout relative to the size of the overall budget should consider the funds an investment opportunity and save all or most of the revenue generated. Conversely, counties with small payouts relative to the size of the overall budget should consider the payment a 'bonus' and spend all or most of the funds.

RESEARCH DESIGN AND METHODS

Using a case study design of three Pennsylvania counties which received windfall payments as cases, this study attempted to determine if a jurisdiction's propensity to spend or consume a windfall is related to the size of the payment. Also, this study attempted to determine if or to what extent various actors or factors influenced the decision-making process. In each county, interviews with public officials familiar with the decision-making process for the payment were conducted. Through these interviews as well as archival materials such as County Commissioner meeting minutes, local newspaper articles, etc., potential spending and saving patterns were identified.

Case Selection

As mentioned earlier, 35 counties received windfall payments in Pennsylvania in 2012. This study sought to identify three counties, with relatively high, medium, and low windfall payouts, for examination. In order to do identify which three counties would be included in the study, a rubric with numerous criteria was established. The first criterion of the rubric was that each county of interest had received a windfall payment from Act 13 of at least $500,000[3]. Such a threshold was necessary to filter out counties for whom the windfall was more or less inconsequential, and therefore not of interest to public policy. Prior survey research examining the behaviors of municipalities in the Pittsburgh

[3] The Act 13 legislation established a cap for the payment of $500,000 or half of a county/municipal budget, whichever is greater. Windfall payments ranged from approximately $48,000 in Huntingdon County to about $8.5 million in Bradford County.

region suggested a wide range in payment size (some as small as $15), with small windfalls being spent almost uniformly (Local Government Academy, 2013). Thus, a sizable payment with a potentially measurable impact was necessary in order to examine any decision to spend or save the windfall. Of the 35 counties receiving funds, 16 counties received more than $500,000.

The rubric also contained two criteria designed to limit the differences between counties, and so to control for a wide range of other variables. The first of these was designed to exclude very small and very large counties, since the issues – and thus the political environment – faced by these was likely to differ a great deal. Somewhat arbitrarily, the counties in the study were limited to those with a population between 20,000 and 130,000. Of the 16 counties receiving $500,000 or more, 9 counties fit within the population parameter. The second criterion to control for unknown differences between counties was to filter out those counties that were within Metropolitan Statistical Areas (MSAs). Thus, the included counties were relatively self-contained economically and demographically. After considering the MSA requirement, five counties remained eligible for inclusion in the study. The counties included Bradford, Clearfield, Greene, Susquehanna, and Tioga counties.

The five similar counties were then evaluated to see if there was variability in the size of the windfall relative to their annual budget, in effect looking for variation of the independent variable in the study. Because budgets were unavailable for all counties at the time this study was conducted, normalization of the payment by population served as a proxy measure for the size of the payment in proportion to the overall budget.

Therefore, the study attempted to include cases in which the windfall size relative to total budget was low, medium, and high. Of the remaining eligible counties, Bradford, Greene, Tioga, and Susquehanna Counties had a relatively high windfall per capita while Clearfield County had a relatively low windfall per capita. Because it has already been the focus of extensive research relative to fracking activity, Bradford County was eliminated so as not to encounter research fatigue[4]. Of the remaining counties, the windfall per capita was lowest in Clearfield County ($14), with Greene and Susquehanna Counties in the mid-range at ($81 and $91, respectively) and Tioga County with the highest windfall per capita ($114).

Ultimately, Clearfield County represented the case in which the windfall relative to budget was low and Tioga County represented the case in which the windfall relative to budget was high. Greene County was ultimately determined as the middle case as Greene County was closer to the mid-range between Clearfield and Tioga Counties and because Greene County provided geographic breadth to the study (Greene County is in southwestern Pennsylvania rather than Central Pennsylvania like Clearfield, Susquehanna, and Tioga Counties). The three cases included in the study are shown below.

Table 5- Windfall Payments and Population Size

County	Windfall Size	Population	Windfall per Capita
Clearfield	$1,146,000	82,000	$14
Greene	$3,130,609.68	39,000	$81
Tioga	$4,792,619.48	42,000	$114

[4] Bradford County has been the research focus of a number of Sociological studies in the past several years concerning community change in the face of natural gas resource extraction (Brasher, 2008).

Research Method

For each county, public officials familiar with Act 13, the impact fee, and the county's budget-making process were interviewed. Preliminary research as well as the websites of each county indicated that the County Commissioners would be of primary interest (Local Government Academy, 2013). In addition, various news articles and reports concerning natural gas extraction and the revenue generated by Act 13 were reviewed in order to learn about the decision-making process for the windfall payment in each county. News articles were furnished by local newspapers for each of the three counties and were limited in scope to reports on county meetings[5]. That is, the articles which were included in the study were articles reporting on county meetings, such as those held by the County Commissioners. Whenever possible, county documents including but not limited to actual County Commissioner meeting minutes and testimony to the state legislature discussing natural gas were examined as ancillary materials.

The structure of the interviews followed the semi-structured qualitative interviewing approach advanced in the early works of Rubin and Rubin (1995) and later Yin (2009) (Rubin & Rubin, 1995; Yin, 2009). This approach allows for the analysis and interpretation of responses to a fixed set of questions presented to multiple participants. In this study, respondents were asked a series of 16 open-ended questions over a period of about 40 minutes. Questions ranged from the importance of Act 13 in the county to current community conditions.

[5] A basic web search for each county yielded a number of local news agencies and outlets. Each agency/outlet provided an archive of articles for the past several years.

Before beginning the Clearfield, Greene, and Tioga Counties cases, a pilot interview was conducted in February 2013 with a public official from Washington County, Pennsylvania. Washington County received a large payout from Act 13 but was excluded from this study because it lies within the Pittsburgh MSA. The interview was used to test the clarity and appropriateness of the questions posed to county officials later in the study. Results of the pilot interview indicated that the questions were clear and allowed participants to share a great deal of knowledge about both Act 13 and the community as a whole. None of the questions initially tested in the pilot were removed for interviews included in the study.

The interview process with officials from the three counties began in earnest in March 2013 and was completed by April 2013. Interviews were completed over the phone. While the conversations were not recorded electronically, conversations were roughly transcribed. Following each interview, a memo was created that referenced the notes taken along with impressions of the interview. In total, eight interviews were completed. Three officials took part in the interview process in Clearfield County, three officials took part in Greene County, and two officials took part in Tioga County. Positions held by those interviewed included: county commissioner, planner, economic development coordinator, conservation district leader, redevelopment authority chairperson, and GIS coordinator. The level of involvement of various public officials varied between counties and thus the official titles of interview subjects differed somewhat from county to county.

Table 6- Research Materials

County	Interviews	Articles	Meeting Minutes	Other
Clearfield	3	11	12	--
Greene	3	12	25	Senate Testimony
Tioga	2	23	3	Senate Testimony

Analytical Method

Analysis of the interviews and ancillary materials followed the interpretative approach suggested by Rubin and Rubin (1995) who have extensive backgrounds in interviewing public officials, particularly in regard to economic development and public budgeting (Rubin & Rubin, 1995). As such, the approach emphasizes the importance of understanding an overall conversation or text and identifying meaning in context. Memos of each call were coded for concepts which led to the emergence of various themes. Concepts and themes derived from the interviews were later compared and combined with concepts and themes derived from the ancillary materials. The process of comparing and combining the interviews and ancillary materials mirrored the process of axial coding as described by Saldana (2012).

The process of coding the interviews and ancillary materials was iterative. Only after meaning could no longer be "wrung out" of the data to support various themes was the process complete. The diagram below illustrates one example of the process of coding which took place. Terms like "separate", "apart", "extra", and "bonus" were coded in one stream of "revenue outside the norm". Words and phrases like "found", "given",

"appear", and "unexpected" were coded as another stream of "unearned income". The two streams together yielded a dominant theme from the case study regarding the perception of the windfall as "mad money" (Clark, 2002). Other major themes to emerge from the data included perceptions of the size of the windfall payment and opinions regarding the long-term prospects of the natural gas industry and impact fee. These themes will be discussed in greater detail in later sections pertaining to each county.

Figure 1 Codes related to the theme of "mad money"

FINDINGS

Case studies of Clearfield, Greene, and Tioga Counties support the arguments presented in windfall payment literature adapted from behavioral economics. That is, Tioga County, with a large payout relative to the size of the overall budget planned to save nearly all of the revenue generated by Act 13. Conversely, Clearfield County, with a small payout relative to the size of the overall budget, planned to spend most of the revenue. Additionally, the findings from the interviews reveal that the way in which each county perceived the windfall as well as perceived the long-term prospects of the industry as a whole influenced the decision to spend or save the windfall revenue. External actors and contextual factors were not found to be as critical to the decision-making process, but that may reflect some limitations to the study. What evidence there is indicates that the decision-making process involved little public participation and that few external circumstances ultimately affected the choices made by public officials.

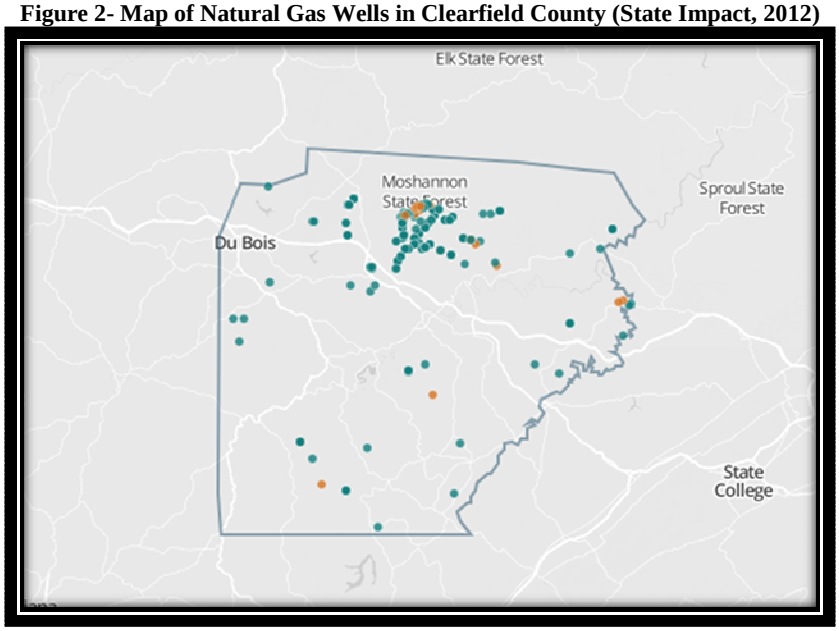
Clearfield County- Small Windfall

Clearfield County lies in the center of Pennsylvania approximately halfway between Pittsburgh and Harrisburg. The county is traversed by Interstate 80 which runs east to west through the state. In 2010, the population was just under 82,000 people (United States Census, 2010). Pennsylvania, which classifies counties by population size, considers Clearfield a Sixth Class county, making it one of the least populated in the state. Clearfield includes the Micropolitan Statistical Area of Du Bois which is situated in the northeastern portion of the county.

Regional employment relies heavily on manufacturing and the service industries including retail, food/accommodations, and health and social assistance (United States Census, 2010). Unemployment as of December 2012 was estimated to be approximately 9.6 percent, nearly two percent higher than the rate for all of Pennsylvania (United States Bureau of Labor Statistics). Recent economic development initiatives in the county apart from that associated with Marcellus Shale include the construction of a Wal-Mart distribution center, a Clearfield extension of Lock Haven University, and a state correctional facility at Houtzdale (Clearfield County Pennsylvania, 2013).

Natural gas extraction in the county is extensive. According to the most recent data available from the Department of Environmental Protection, 284 active natural gas wells exist in Clearfield County (Pennsylvania Department of Environmental Protection, 2013). By number of wells in operation, Clearfield County is within the top ten most active counties in Pennsylvania. Of those 284 active wells, 142 are located in Lawrence Township, making Lawrence the largest cluster of drilling in the County (Pennsylvania Department of Environmental Protection, 2013). Outside of this cluster, wells are sparsely distributed, with extraction spanning from the county border in the west to Du Bois in the east.

Figure 2- Map of Natural Gas Wells in Clearfield County (State Impact, 2012)



Returns from the Act 13 natural gas impact fee were received in November 2012. Clearfield County received $1,146,000, or about $14 per person. Per the new legislation, allocations of the funds were to be listed on the PUC Fund Usage Report and displayed on the county's website. The PUC Fund Usage Report became available in December 2012. The report is displayed below.

Table 7- Clearfield County PUC Fund Usage Report

CATEGORY	AMOUNT (rounded to the nearest hundred)
Construction, reconstruction, maintenance and repair of roadways, bridges and public infrastructure.	$0
Water, storm water and sewer systems, including construction, reconstruction, maintenance and repair	$0
Emergency preparedness and public safety, including law enforcement and fire services, hazardous material response, 911, equipment acquisition and other services	$212,500
Environmental programs, including trails, parks and recreation, open space, flood plain management, conservation districts and agricultural preservation	$113,000
Preservation and reclamation of surface and subsurface waters and water supplies	$0
Tax reductions, including homestead exclusions	$0
Projects to increase the availability of safe and affordable housing to residents	$0
Records management, geographic information systems and information technology	$76,700
The delivery of social services	$300,000
Judicial services	$187,500
Deposit into the municipality's capital reserve fund if the funds are used solely for a purpose set forth in Act 13 of 2012	$206,300
Career and technical centers for training of workers in the oil and gas industry	$0
Local or regional planning initiatives under the act of July 31, 1968 (P.L. 805, No. 247), known as the Pennsylvania Municipalities Planning Code	$50,000
TOTAL	$1,146,000

The PUC Fund Usage Report shows that none of the payment was withheld—all funds were deposited into seven of the categories established by the legislation. Of the 13 categories listed on the Fund Usage Report, only one category corresponds to savings. This category is listed as "Deposit into the municipality's capital reserve fund if the funds are used solely for a purpose set forth in Act 13 of 2012". Clearfield County listed $206,300 to be deposited into the reserve fund, representing a savings rate of approximately 18 percent. Conversely, nearly 82 percent of the fund was spent in its first year for emergency preparedness and public safety, environmental programs, records

management and GIS, social services, judicial services, and local regional planning initiatives.

Perception of the Windfall Payment

Analysis of the interviews and ancillary materials from Clearfield County suggest that the perception of the windfall payment influenced the decision of public officials to spend, despite an acknowledgement of the need to save the funds. Officials in Clearfield County also perceived the fund to be an extra source of revenue separate from other revenue streams. In addition, prospects for long-term engagement of the industry in the region were uncertain. Because officials perceived the windfall as relatively insubstantial in terms of size, conceptualized the funds as separate from other funding sources, and felt uncertain about the future of the industry, spending was more prevalent than saving.

In terms of windfall size, public officials perceived the payment of $1.1 million as relatively insubstantial. That is, while officials recognized that the payment presented an opportunity to improve the county's finances, they admitted that $1.1 cannot be stretched very far. One public official noted that "people think this is a large sum but depending on where you are, it really is not". Consensus in Clearfield County was that the impact or opportunity associated with the windfall was relative—impacts would vary from recipient to the recipient—and for Clearfield County, the array of realistic choices for the funds were narrow. Public officials still maintained, however, that the revenue proved advantageous.

Comments made by public officials regarding the size and impact of the windfall also indicated that the size of the payment was important in deciding to save or spend the funds. One official noted, “the [larger] the size of the check to the overall budget, the more discretionary the spending would be. The more you have, the more you would be able to save for the future”. However, no indications as to how large the check would have to be to induce greater savings were provided.

In addition to the payment being perceived as small or having limited impact, the windfall was perceived as something extra or separate from the normal revenue the county might collect. Officials emphasized the fact that unlike tax revenue, for example, the impact fee was not to be considered a part of the operating budget for the county to fulfill its obligations. While public officials conceded that the funds could be used to supplement the county’s budget when needed, a clear preference to keep the money separate became apparent.

When asked specifically what *should* be done with this “extra” money, public officials were inconsistent in their preferences. Officials emphasized the need to save while simultaneously providing a list of ways to spend the funds. One respondent named a host of uses which closely mirrored the actual allocations listed on the usage report. Another wished to use the funds to cut property taxes so that all residents, with or without wells, could share in the wealth generated. Another emphasized the need to use the funds to offset the externalities associated with drilling. All of the respondents, however, frequently referred to the need to make “updates”, “upgrades”, and “repairs” with the monies received.

In some respects, officials spoke of the money from Act 13 as an opportunity for the county to depart from its reality of fiscal austerity. This year, commissioners were able to "hold the line" on budgeting by refusing to raise taxes, tap capital reserves, or issue bonds. The county budget balanced "to the penny" in 2013. However, while dedicating itself to austerity, one official admitted that the county does not "live high on the hog". In an ideal world, officials indicated that the unallocated windfall payment would be a way for the county to stray away from such austerity and splurge. One way to splurge was to give everyone in the county a property tax break, an option which was far outside the realm of possibility given the county's finances. Thus, allocations of the funds were much more pragmatic. Clearfield County distributed the funds in seven of the 13 categories defined by the PUC to fund various projects and departments. The payment made funds available that would not have been otherwise, but represented no major departure from the fiscal prudence and austerity of the county as a whole.

Prospects for the Industry and the Windfall

In terms of natural gas production and its long-term prospects, officials generally believed that natural gas production would continue well into the future. Consequently, returns from the impact fee were also expected for many years to come. Recalling the long history of timber and coal mining, officials explained that natural gas would not leave Clearfield County in the near future. However, estimated time horizons for natural gas extraction varied significantly. Some estimated that natural gas extraction would

continue for at least 15 years while others estimated extraction would continue as long as 40 years. None of the estimated time horizons were shorter than 10-15 years.

Those interviewed cited a number of pieces of evidence to support the notion that the industry would remain an important part of the local economy in the future. For example, sunk costs borne by the gas companies to drill the wells were cited as a reason to believe natural gas production was a long-term industry. With the cost of establishing a well near $6 million, as one respondent estimated, the thought of extraction ceasing in the short-term seemed unrealistic. Officials also mentioned the Utica Shale Formation, a natural gas play which lies beneath the Marcellus Shale Formation, as another reason to believe the industry would stay in place. All else held constant, interviewees believed that the Utica Formation offered stability for the county in the long-run.

Despite such optimism, a number of factors undermined the confidence of the officials in the long-term prospects of the industry. First, county officials alluded to the importance of success of activities related to drilling in determining the fate of extraction. For example, in order for production to continue, officials argued that the construction of pipelines to distribute the gas was necessary. If the pipelines aren't constructed, production and consequently revenue would decline. Throughout the interview, pipelines became a symbol of future prosperity for Clearfield County. Second, interviewees expressed concern about natural gas prices. Without a high prevailing price for the commodity, production has decreased and will continue to do so, potentially forcing gas companies to abandon the wells altogether. Third, respondents worried that the type of

gas in Clearfield County, primarily "dry"[6] gas, would make their county less attractive to gas companies and threaten the industry. One respondent concluded that although the entire county sits atop natural gas, it is not a "sweet spot" for the resource because the gas below is primarily "dry" rather than "wet". With these uncertainties or contingencies in mind, officials remained only "cautiously optimistic" when it came to natural gas in Clearfield County.

Further contributing to uncertainty regarding the industry and in turn the viability of the impact fee was the purportedly poor administration of the revenue at the state level. County officials exhibited a clear distaste if not distrust of the PUC in the collection and distribution process for the impact fee. With the revenue aggregated at the state level and re-distributed to counties and municipalities, windfall payments were viewed with uncertainty. The exact size of the payment for Clearfield County was unclear until late November 2012 despite the fact that the legislation establishing the fee was enacted in February 2012. Furthermore, several initial estimates were erroneous. Lawrence Township within Clearfield County, for example, was given a very low and inaccurate estimate early-on before receiving a much larger payment months later.

Perception of the size of the windfall, time horizon for the industry, and prospects for future payments all influenced the decision-making process of Clearfield County to spend most of the revenue. In terms of size, behavioral economics contends that in the framework of the mental accounting model, small windfalls, such as the payment received by Clearfield County, are often considered "bonuses". Such bonuses are

[6] "Dry" gas is free from a number of additional chemicals, such as ethane, whereas "wet" gas is not. In the current market, "wet" gas commands a higher price than "dry".

deposited in mental “mad money” accounts. In the mental accounting framework, in which funds are non-fungible, money deposited into “mad money” accounts is spent more freely than money deposited in others. The fact that officials regarded the payment as extra or separate revenue indicates a prevalence of mental accounting standards by which such funds would be spent more freely. Combined—perception of the windfall, outlooks for future prosperity, and uncertainty regarding payments—influenced the county’s decision to spend a majority of the payment despite the realization that an inherent advantage to savings exists.

The Context of the Decision-Making Process

However, the political nature of the process was also explored. That is, the ‘actors’ and ‘factors’ were considered in an examination of the decision-making process. Generally speaking, the decision to spend the revenue invited little public involvement. The same is true for the county budget as a whole. In fact, one public official noted that the 2013 Operating Budget was written almost entirely by one member of the Board of Commissioners.

Public officials explained that in Clearfield County, no public meetings were held for the sole purpose of soliciting uses for the windfall payment. While the funds were mentioned at several regularly scheduled County Commissioner meetings, the topic was not approached in any special sessions. In contrast, various meetings were held at the

township and borough levels regarding municipal windfall payments. Thus, the decision to save or spend the windfall was largely insulated from the public at the county level.

Perhaps unsurprisingly, given the lack of debate concerning the payment, none of those interviewed could recall any particularly vocal individuals or groups mobilizing during the decision-making process. The only requests made regarding the funds were from townships and boroughs. One commissioner noted that the supervisors from boroughs and townships were "lining up" to receive additional funds from the county to complete projects. With the exception of the supervisors, external agents such as lobbyists, interest groups, etc. had little influence on the county's decision to allocate the funds.

Moreover, dissatisfaction with natural gas and/or the externalities associated with extraction were minimized in Clearfield County. While all of those interviewed cited complaints regarding noise, traffic, and road damage related to extraction as concerns, few expressed outrage or overwhelming discontent. Rather, officials explained that such externalities were to be expected given the nature of the industry. In cases where externalities have proven egregious, interviewees claimed that the county and other levels of government have worked with the natural gas companies to improve conditions, potentially loosening up funds from the impact fee for other uses. For example, delivery schedules for noisy water trucks have been altered to accommodate complaints and the natural gas companies have repaved or repaired at least some damaged roads.

Similarly, respondents expressed only moderate concern regarding extraction and the environment. Environmental concerns have been ameliorated by regulations put in

place by the state. One respondent explained, "in the 50's and 60's this area was strip mine from one end of the county to the other… [The strip mines] made all the creeks run red from sulfur and people are afraid of a repeat of that situation. But…we have regulations in place this time. Water is being protected by the state. Science… helps us out." Confidence in science, technology, and regulation, then, help to allay environmental fears in Clearfield County, decreasing the importance of such issues in budgetary processes. Furthermore, a history of environmental degradation has made the county more tolerant of such externalities.

Perhaps more influential in the decision to spend the funds was the fiscal reality of Clearfield County as mentioned earlier. While officials conceptualized the windfall as a potential opportunity to depart from fiscal austerity, ultimately, the funds were used in such a way to perpetuate austerity. Officials complained that intergovernmental budget cuts had created difficulty for the county. One official noted, "They [the state] love to pass the buck and make us make the tough [budgetary] decisions. We have to make the [budgetary] decisions here at the local level." Unfunded mandates by the state became a popular topic of discussion and were indicative of financial strains faced by the county.

Comments from public meetings revealed that simultaneously there was increased funding needs for various departments. These increased needs posed a challenge to the county's finances. Between 2012 and 2013, for example, the county had anticipated increased need for Children, Youth, and Family Services. The increase was expected to be approximately $920,000. Commissioners noted that finding the funds was difficult without raising taxes. At least part of the need was addressed by funds from Act 13.

Clearfield County allocated $300,000 specifically to social services presumably in an effort to close the gap.

However, officials argued that Clearfield County was no worse off than any other county in the state. In fact, officials argued that Clearfield County was actually in a better financial situation than some other counties. One official explained that "we are fairly fortunate that we don't have any large capital projects that we are paying for. A lot of these counties are having problems with capital projects that they started funding [a long time ago] and now have to pay for. We don't have those here in the county." Despite perceived fiscal stress, at least in relative terms, Clearfield County is performing better than its peers.

Relatively little public input was sought in the windfall payment decision-making process. As a result, few if any actors outside of the Board of Commissioners influenced the allocational outcomes. Furthermore, while fiscal stress and budget cuts were worrisome for county officials, no explicit link between such stress and the allocation of funds existed. Discontent with extraction and its externalities, including environmental externalities, was not pervasive within the community. A confidence in science, technology, and regulations ameliorated concerns in Clearfield County when it came to environmental degradation. The examination of Clearfield indicated that a majority of the funds were spent, supporting the contentions of the behavioral economists. Furthermore, public officials expressed sentiment consistent with the theories of the behavioral economists, supporting the extension of the theory from the individual level to the public arena.

Greene County- Mid-Range Windfall

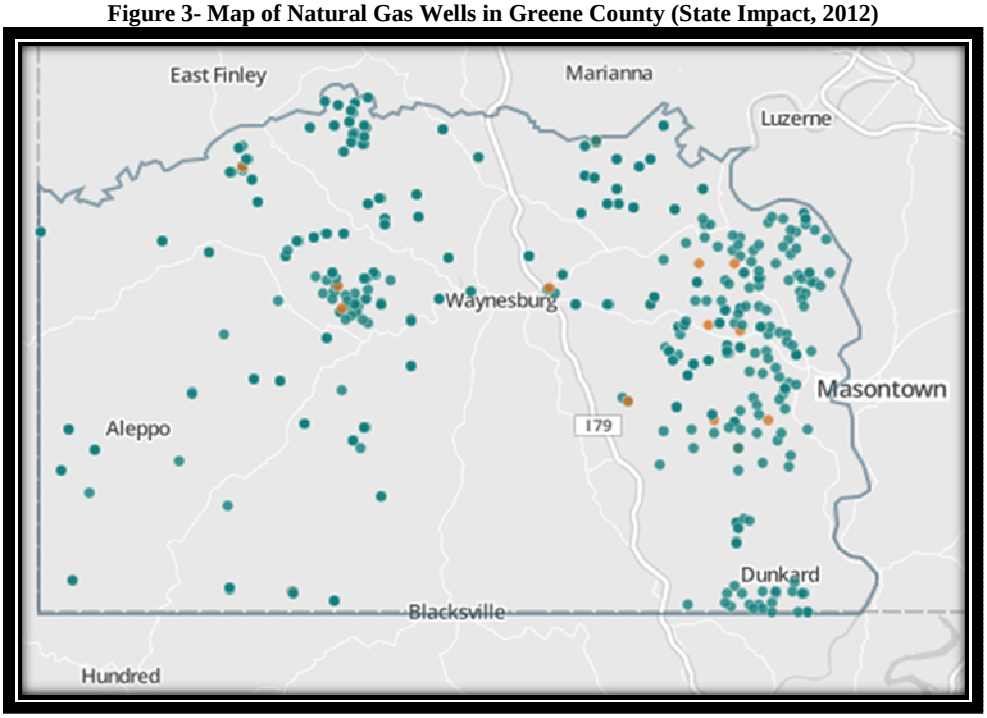
Greene County is situated in the southwest corner of Pennsylvania and borders West Virginia both on the eastern and southern sides of the county. The City of Pittsburgh is approximately 60 miles north of Greene County while Morgantown, WV is approximately 25 miles south. Interstate 79 cuts through the county from north to south and connects Morgantown to Pittsburgh. In 2010, the population was just under 39,000 people (United States Census, 2010). In terms of population, Greene County is approximately the same size as Tioga County (42,000 people) but smaller than Clearfield County (82,000). Clearfield, Greene, and Tioga Counties are considered Sixth Class Counties by Pennsylvania, meaning they are some the least populated counties in the state.

The largest sectors of employment in order of size for Greene County include education, health, and social assistance; agriculture, forestry, hunting, fishing, and mining; and construction (United States Census, 2010). Unemployment as of December 2012 was estimated to be approximately 7.2 percent, on par for all of Pennsylvania but lower than Clearfield and Tioga Counties (9.6 and 7.9 percent, respectively) (United States Bureau of Labor Statistics). In addition to natural gas, Greene County is currently in the process of expanding its technology industries including high performance computing and data management.

In terms of natural gas, Greene County has many more wells than Clearfield County but fewer wells than Tioga County. According to the most recent data available from the Department of Environmental Protection, 650 active natural gas wells exist in

Greene County (Pennsylvania Department of Environmental Protection, 2013). In comparison, Clearfield County has 284 wells and Tioga County has 1,197 wells. By number of active wells, Greene County is the sixth most active county in terms of natural gas production in Pennsylvania. Wells are scattered throughout Greene County with greater density to the east of Interstate 79. See map below.

Figure 3- Map of Natural Gas Wells in Greene County (State Impact, 2012)



As discussed earlier, the size of the windfall payment in proportion to the 2013 Operating Budget for Greene County is approximately 12.2 percent. The windfall per capita is $81. In terms of windfall in proportion to the budget and windfall per capita, Greene County is in the mid-range for this case study. While data pertaining to spending and saving were unavailable at the time this study was conducted, interviews with public officials indicated that a majority of the funds would be consumed. In March 2013,

officials explained that the county had "spent less than half [of the funds], but eventually all would be spent… there is no anticipation of holding the money back."

Perception of the Windfall

No pervasive attitude toward the size of the windfall existed. The payment was neither regarded as substantial nor insubstantial. Indifference toward the size of the payment juxtaposed the attitude of Clearfield County which was thankful for the revenue, but felt that possibilities for the funds were limited. Greene County officials embraced the windfall and argued that they, like any county in Pennsylvania, could use the revenue given the current state of the economy. There were no perceived limitations or constraints attached to the revenue as a function of windfall size.

Officials believed that the size of the windfall payment was irrelevant to the decision-making process because regardless, the funds should ideally be spent rather than saved. One respondent argued, “I don’t think size influences whether to save or spend [the money]. I think whether it’s [the payment] 10 bucks or 1,000,000 bucks… [we] will spend it.” Such an attitude distinguished Greene County from Clearfield County. That is, Clearfield County exhibited inconsistent preferences for the funds—the county valued savings but ultimately valued spending more. Greene County, however, consistently chose spending over saving. Small or large, in absolute or relative terms, officials emphasized the importance of spending the funds generated by Act 13.

Greene County also did not regard the windfall payment as a “bonus” or “extra money” to the same extent officials in Clearfield County did. Officials admitted that the

funds were essentially "newfound" money that wasn't "expected before 2012" but the monies from Act 13 were largely undistinguishable from other funds. In other words, officials did not perceive the impact fee to be separate from normal revenue, like taxes.

Because Greene County perceived the impact fee monies as equivalent to other revenue streams like taxes, the windfall payment funds were fungible. In other words, the county was inclined to spend the funds in the same way it would spend any other funds because there was no special meaning attached to the windfall payment. This utilitarian view of the funds contrasts with the view in Clearfield County which saw the funds as a way to depart from the otherwise fiscal modesty of the county. In Greene County, the funds were just another way to pay the bills. To an extent then, the windfall payment was viewed as another form of income for the county. As income, the preference to save was not as pronounced as it was in Clearfield County—there was no inclination to splurge or be frivolous, only to pay for needed projects.

This helps to explain why officials in Greene County exhibited no hesitation in deciding whether to spend or save the funds. Consumption of the windfall payment was the preferred option of county officials. In fact, officials not only preferred spending but also discouraged saving the funds. Officials were so emphatic that the money should be spent, one respondent argued, "If you save it, it would need to be saved for a reason. If you were trying to do a big project, I could see saving it that way you could do a big project." Such attitudes support the notion that the funds were considered income. Just as an individual is induced to save income for special occasions or trips, officials in Greene County would be induced to save for a special or "big" project.

Suggested expenditures for the money from Act 13 were wide in scope. Some of the suggested uses included upgrades to water and sewer lines, paying for repairs to the Greene County Courthouse roof, alleviating issues with the county's housing stock, and repairing some of the county's bridges. Respondents frequently indicated that the funds could be used to make upgrades and repairs that have been neglected by the county. In turn, such upgrades or repairs were seen as an investment for the future. One respondent commented, "We need water lines and sewer lines [upgraded]. If we don't have that, we can't expand, and there goes taxes." Similar comments were made by officials throughout the interview process.

Conversations with officials from Greene County indicated that the county's infrastructure was in worse condition than the infrastructure in Clearfield County. Furthermore, complaints regarding infrastructure from Clearfield County were more directly tied to externalities, whereas Greene County made it clear that improvements to water, sewerage, bridges, and roads were needed long before natural gas extraction came to the county. Thus, pent up demand for such upgrades and repairs existed. The funds from the impact fee were deemed necessary to alleviate some of these problems.

Prospects for the Industry and the Payment

Like Clearfield County, long-term prospects for the natural gas industry and future payments from Act 13 were uncertain. Officials argued that the Utica Shale Formation would ensure that natural gas extraction would continue for years to come. However, such statements were undermined by a number of factors just as they were in

Clearfield County. Price variability of natural gas worried officials in Greene County as did available technology. Even if the Utica Formation offered additional natural gas reserves, technology, or the ability to retrieve the gas concerned Greene County. One official declared, "I don't think it's [extraction] going to go anywhere… [but] It [extraction] depends on the price of gas is and if it's something they can get to… It's all based on technology." Another official indicated that natural gas would be lucrative in the future, but that there may be "leveling off" as time goes on. In other words, production would continue, but at a decreasing rate of growth. None of the officials offered specific estimates as to how long natural gas extraction would continue. Officials in Clearfield County provided a wide range of estimates from 15 to 40 years whereas as officials in Greene County used only generalities in describing the time horizon for future extraction.

Greene County also noted the importance of related industries to the success of the natural gas extraction in the long-run. While natural gas prices and available technology worried Greene County, so did the completion of pipelines and establishment of compressor stations to transport natural gas. These industries were collectively referred to as "downstream industries". Officials used downstream industries as evidence that natural gas would be an important part of the economy in the future. However, officials also warned that if downstream industries failed to develop, Greene County and Pennsylvania as a whole would be endowed with natural gas reserves and no way to transport the gas to market. The future of natural gas was contingent upon the development of these downstream industries.

With uncertainty regarding the industry as a whole came uncertainty regarding the payout from Act 13. Unlike Clearfield County, officials in Greene County were confident in the state in the collection and administration of the impact fee. However, Greene County expressed concerns regarding the variability of the payout due to price variability. Officials noted that because the impact fee is not a flat rate but instead based on a number of variables, including number of wells drilled and the average annual price of gas, there would inevitably be uncertainty regarding the funds. One official noted that the county had its "hands in the air" because it did not know what future payouts may be. In other words, the county was ambivalent regarding the future of the payments and thus hesitant to rely upon the revenue.

In terms of the perception of the windfall payment, Greene County differed from Clearfield County. Officials in Greene County appreciated the extra funds and did not perceive the funds to be too small or insubstantial like officials in Clearfield County did. Thus the county intended to spend all or most of the funds in the first year, as though it were income. Given the poor state of community infrastructure even before Marcellus Shale development, spending the revenue, in totality, was necessary.

The Context of the Decision-Making Process

Similar to Clearfield County, the decision-making process for the windfall payment was largely unaffected by citizens, interest groups, or lobbyists. Respondents had no memory of any particular groups or individuals being active or vocal about ways to spend the impact fee funds. Further, respondents could not recall the county holding

any meetings in regard to the windfall payment. Reports of County Commissioner meetings indicate that shortly after estimates of the payment were provided, county commissioners announced a number of potential uses for the funds. Thus, the commissioners had already contemplated uses for the payment even before the public became aware of the payment, effectively excluding citizens from the decision-making process. The only public meetings regarding uses for the payment that respondents could recall were at the borough and township levels, and dealt with payouts to those jurisdictions. More specifically, townships and boroughs solicited input from citizens in regard to the windfalls received by the townships and boroughs.

Also, much like in Clearfield County, officials believed that Greene County was facing a budget crunch or fiscal stress. However, respondents pointed out that they were no worse off than any other county in the state. One official noted, "This County is in decent shape… We're in the black and [we're] in decent financial shape. It's not one [a county] where we aren't sure if we will stay open tomorrow." Compared to other counties, then, Greene County was not perceived to be in a dire financial situation.

In discussing the budget crunch and the financial state of the county, officials complained about upper-level budget cuts and unfunded mandates established by the state. The most prominent complaint regarded the county's conservation district funding. Officials explained that conservation districts received no funding in the 2013 State of Pennsylvania Budget despite having an increased workload. One official opined "The problem is the conservation district is delegated to hand out permits for these [natural gas] developments (gathering lines, stream crossings etc.) but they are not getting funding

now and so they have to make up money other ways." Other officials complained that upper-level cuts in grant-funding, from Housing and Urban Development (HUD) for example, have been cut. Such cuts undermined the county's various initiatives, particularly for affordable and improved housing.

Complaints regarding housing were numerous. According to Greene County officials, housing stock has been in poor condition for years and the natural gas boom has only exacerbated the problem. An official stated, "Housing has been taken by Marcellus workers and so rents have gone up and there is more demand… it's sort of created a housing shortage or perceived housing shortage because they [transient workers] have taken vacant spaces. The workers for Marcellus shale have taken lower quality housing from the poor especially." Another official claimed that workers who had migrated to work for the natural gas companies had filled the county's mobile home parks and a number of hotels in the area to capacity. Consequently, the county is desperately trying to keep up with immediate housing demand and externalities associated with extraction rather than those in the future.

Other than housing, officials noted that some discontent in the community has been caused by traffic, noise, and deterioration of the roads because of Marcellus Shale activity. In Waynesburg, the county seat, water trucks traveling through the town made it difficult to have a conversation on the street corner. Elsewhere, dust had become an issue with local residents. By far the most serious complaint was with the deterioration of roads, however. Various parts of the county had poor roads and bridges before natural gas extraction began. Since, the condition of these roads and bridges has only worsened.

Still, opposition to development was scant. None of the externalities identified had precipitated a backlash from the community at large.

In terms of the environment, the consequences of natural gas extraction were unclear, but there was fear regarding what the environmental impacts might be. One official lamented, "There is concern [for the environment]. To what extent there is [a threat], I don't think anyone has figured it out. We are afraid 15 years from now we will all be dead. It feels like we're chasing the impacts instead of meeting them head on. We definitely are reactive, not proactive." While officials expressed a general uneasiness about the environment and natural gas, they pinpointed specific concern for water and water quality. Citizens worried that natural gas extraction would destroy the county's streams, rivers, and drinking water. One official noted that, "we have individuals who belong to groups and organizations for streams and stream protection and they go out to test streams and they realize the issues [with water quality] right away." The county expressed interest in educational outreach regarding water quality testing protocols and documenting water quality issues. By educating the public about water testing, officials believed that it would be easier to establish proof that natural gas was affecting water quality in the county.

The political factors identified by the literature on public budgeting did not prove particularly important in the case of Greene County. Political mobilization and/or participation were unimportant or at least not memorable to those interviewed. Externalities associated with natural gas extraction were topics of discussion but had not precipitated a flurry of activity to stop the extraction companies, hold the companies

accountable, or use the funds to address the externalities. The only issues which did prove pertinent were fiscal stress and budget cuts. However, officials in Greene County, much like in Clearfield County, did not perceive their own fiscal situation to be worse than anywhere else.

Greene County intended to spend most of the windfall payment which does not fit entirely within the theoretical framework established by behavioral economics. However, the County also evinced different attitudes about the money, namely that is was the same as normal income. Keeler et. al (1985) found that such a perception exists when windfall payments are proportionally neither large or small. In other words, Keeler et. al (1985) contend that medium-sized windfalls are spent as normal income. Thus, findings from Greene County lend support to Keeler et. al (1985) but does not fit well within the greater framework.

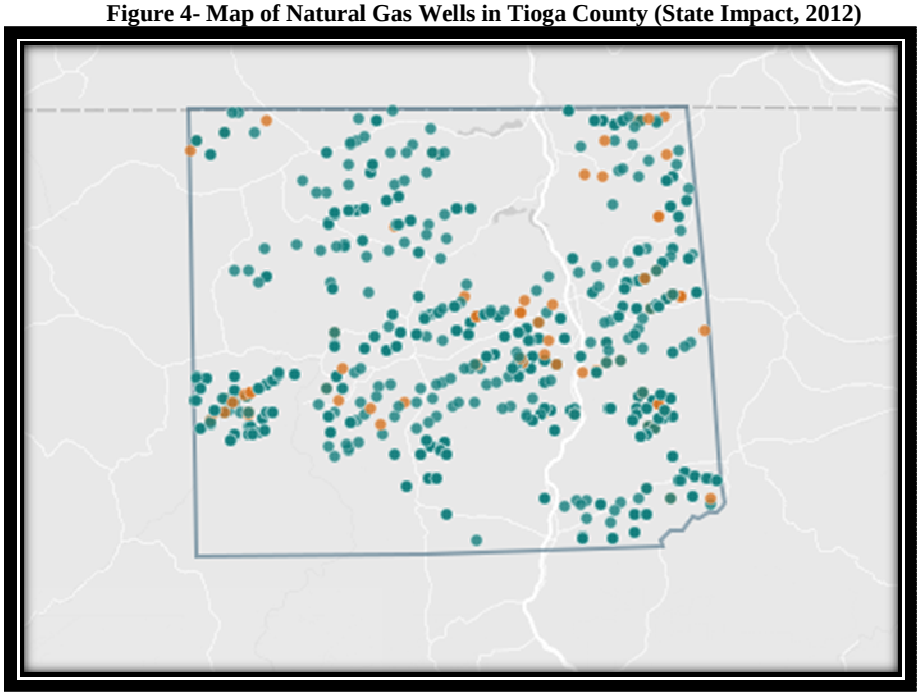
Tioga County- Large Windfall

Tioga County is in north-central Pennsylvania along the Pennsylvania-New York border. Harrisburg, PA is approximately 140 miles to the south while Scranton, PA is approximately 120 miles to the east. In 2010, the population was slightly higher than 42,000 people (United States Census, 2010). Tioga County is more populated than Greene County (39,000 people) but approximately half as populated as Clearfield County (82,000 people). Tioga County, like Greene and Clearfield Counties, is one of the least populated in the state.

Education, healthcare, and social assistance; manufacturing; and retail trade are the largest sectors of employment in Tioga County (United States Census, 2010). Unemployment as of December 2012 was estimated to be approximately 7.9 percent, near the rate for all of Pennsylvania but slightly higher than Greene County (7.2 percent) and below the rate of unemployment for Clearfield County (9.6 percent) (United States Bureau of Labor Statistics). Recent economic development initiatives in Tioga County apart from Marcellus Shale development include the establishment of a 17.6 acre business park and re-development of a former tannery site for recreation.

In terms of natural gas, Tioga County is the second most active county for natural gas in the state. According to the Department of Environmental Protection, 1,197 active natural gas wells exist in Tioga County (Pennsylvania Department of Environmental Protection, 2013). Active wells are distributed throughout the county with few locales remaining untouched.

Figure 4- Map of Natural Gas Wells in Tioga County (State Impact, 2012)



In November 2012, Tioga County received $4,792,619.48, or $114 per capita, from the natural gas impact fee established by Act 13. The PUC Fund Usage Report listing the allocations of the funds became available in March 2012. The report is displayed below. Of the payment, Tioga County chose to spend only $36,520 of the funds for emergency preparedness and public safety issues. Thus, consumption accounted for only 1 percent of the windfall. Important to note, however, is that Tioga County's savings is not accounted for in the capital reserves category of the PUC Fund Usage Report. Rather, officials interpreted the legislation in such a way so as to allow the county to withhold spending of the payment altogether. The remaining balance for Tioga County's windfall payment is $4,756,099.48.

Table 8- PUC Fund Usage Report for Tioga County

CATEGORY	AMOUNT (rounded to the nearest hundred)
Construction, reconstruction, maintenance and repair of roadways, bridges and public infrastructure.	$0
Water, storm water and sewer systems, including construction, reconstruction, maintenance and repair	$0
Emergency preparedness and public safety, including law enforcement and fire services, hazardous material response, 911, equipment acquisition and other services	$36,520
Environmental programs, including trails, parks and recreation, open space, flood plain management, conservation districts and agricultural preservation	$0
Preservation and reclamation of surface and subsurface waters and water supplies	$0
Tax reductions, including homestead exclusions	$0
Projects to increase the availability of safe and affordable housing to residents	$0
Records management, geographic information systems and information technology	$0
The delivery of social services	$0
Judicial services	$0
Deposit into the municipality's capital reserve fund if the funds are used solely for a purpose set forth in Act 13 of 2012	$0
Career and technical centers for training of workers in the oil and gas industry	$0
Local or regional planning initiatives under the act of July 31, 1968 (P.L. 805, No. 247), known as the Pennsylvania Municipalities Planning Code	$0
TOTAL	$36,520

Perception of the Windfall Payment

The windfall payment represented nearly 25 percent of the county's 2013 Operating Budget. Of the three counties included in this study, Tioga County received the largest payout in both relative and absolute terms. Despite the large relative size of the payment, officials did not recognize the windfall as having a major influence on the county's finances. Rather, Tioga County had managed without the impact fee in the past and planned to do so in the future. Tioga County in comparison to Clearfield and Greene

Counties thus exhibited mild indifference toward the revenue. Clearfield County was grateful for the funds but ultimately felt that limited opportunities existed because the size of the windfall payment was insubstantial. Greene County felt that any payment, large or small, presented an opportunity to alleviate pent up need for various projects and should be spent. Tioga County, however, maintained that the windfall payment was large and existed outside of the normal realm of fiscal decision-making processes and thus, should be saved for later use.

Like in Clearfield County, officials in Tioga County indicated that the funds were "separate" from normal revenue. However, a subtle difference in the perception of the funds between the two counties existed. While Clearfield County approached these separate funds as a "bonus" or "newfound" source of money, Tioga County approached the funds as an endowment. This is not to say that Tioga County specifically planned to invest the funds and accumulate interest; rather, the county perceived the payment as a sum of money bestowed upon it to be kept mostly intact, with only small, occasional withdraws.

Consequently, officials were emphatic that the funds not be consumed without careful consideration. Respondents explained that the county was already "conservative" with its finances and that the conservatism used to approach the operating budget had carried over in the management of funds from Act 13. In some respects, oversight had become more important if not stricter in respect to the windfall payment. The county and its officials considered themselves to be stewards of the impact fee revenue and as such emphasized extreme caution in how the funds were spent. One official explained that the

county was “obligated to manage those dollars… we [the county] need to be careful… we need to manage this money.” Another explained, “we didn’t plant [natural gas], didn’t grow it, it’s a gift—so [we] manage it [and the funds generated by it].”

In exercising caution, the preference for the funds generated by Act 13 was to save. Whereas Clearfield County exhibited inconsistent preferences—a desire to save while simultaneously consuming—and Greene County consistently preferred to spend, Tioga County was the only county to prefer to save the funds generated by the new law. Savings represented an opportunity for the county to promote economic growth and development in the future. Officials noted that it was the economic growth and development introduced by such investments that would mitigate the negative effects of natural gas extraction in the community.

While officials did not advance this argument, it stands to reason that a focus on savings and re-investment may help to soften the future bust of the natural gas industry in the future. Tioga County received the largest windfall payment because it was most active in terms of production. Arguably, then, the bust will be greatest in Tioga County. Therefore, savings could help ameliorate some of the ramifications of the impending bust. Of the three counties, then, Tioga should be preparing for the impending bust.

Prospects of the Industry and the Payment

In terms of long-term prospects for the industry and windfall payment, Tioga County, like the other two counties, expressed concern. All respondents agreed that natural gas extraction “will be around for a long time.” However, officials qualified such

remarks. One official commented that they were already worried because there had already been a decline in the number of new wells drilled. Similarly, officials were uncertain about the future of the windfall payment. One public official, like in Greene County, worried for the conservation districts because in the state budget, funding had been cut. If revenue from the impact fee drops off, officials worried that the conservation districts might be in a difficult position.

Officials in Tioga County expressed additional concern for the long-term viability of businesses which have been spawned as a result of Marcellus development. The official claimed that businesses were still opening, but presumably if the natural gas industry slows, such growth will stagnate if not contract. Thus, there was a concern for overall economic health of the community (and the state) rather than a concern for natural gas and windfall payment alone.

The Context of the Decision-Making Process

Like the other counties, external actors were largely absent from the decision-making process. One respondent concluded that the allocation of the funds was solely the responsibility of the Board of Commissioners, with little public input. Comments were made about the impact fee at regularly scheduled meetings of the Board of Commissioners, but no special sessions were held to gauge public support for any initiatives. Furthermore, none of the respondents could recall the involvement of any particular citizens, groups, or lobbyists in the allocation of the funds. The public had been

so disengaged in the decision-making process, one public official noted, “Overall it’s been quiet. I don’t know how many people know we are getting money.” In all three counties, the decision-making process for the windfall payment proved largely apolitical, with the choice falling primarily on the shoulders of county officials.

Fiscal stress also did not prove particularly influential in the decision to save the windfall payment received, just as it did not prove influential in Clearfield and Greene Counties. While officials complained of unfunded mandates and tough economic conditions, officials felt that the Tioga County was no better or worse off than other counties in Pennsylvania or across the United States. News reports did indicate that in Tioga County the 2013 Operating Budget did not include a cost of living increase for retirees, the first time in at least three years that there was no increase. Such a move indicates some level of fiscal stress, or concern for the balance of the county’s budget. However, at the same time, the county chose not to increase taxes this year.

Like Clearfield and Greene Counties, complaints regarding traffic, noise, and road quality were common in Tioga County. Unfortunately, Tioga County also has one of the highest percentages of dirt and gravel roads of any county in Pennsylvania, exacerbating road quality issues in the face of natural gas extraction. Officials also complained that community services had been hit hard by Marcellus Shale development. The influx of workers in particular had made it difficult for Tioga County to provide an adequate level of social and community services. However, officials noted that the industry has been and will continue to be a good partner for the county to improve roads, services, etc.

While a concern for the environment and the effect that natural gas extraction might have on the environment are important to Tioga County, one official noted that such concerns have reached a saturation point. That is, citizens are fatigued by the debate regarding extraction and the environment. Consequently, there are relatively few calls to take environmental action. Another official noted that the most vehement opposition to extraction and strongest calls for environmental action has not come from Tioga County, Pennsylvania but instead from neighboring counties in New York. On more than one occasion, New Yorkers have swarmed Tioga County to complain about water pollution and extraction. One interview subject mentioned that New Yorkers have become concerned that dairy products from Tioga County are being tainted by the water the cows drink.

A Discussion of the Findings from Clearfield, Greene, and Tioga Counties

The literature concerning individuals and households' propensity to spend windfalls suggests that windfall payments are often consumed in inverse proportion to the size of the windfall to total income (Keeler, James, & Abdel-Ghany, 1985; Landsberger, 1966). In other words, individuals are generally more likely to spend windfalls that are small and save those that are large. This study sought to test such assertions by observing the behaviors of three Pennsylvania Counties which received windfall payments from natural gas impact fee revenue.

Before this study, such findings had not been tested on collective decision-making situations. In this study, the collective decision-making was at the county level for revenue from the natural gas impact fee. Results of this study indicate that decisions about windfall s at the county level are similar to those at the individual or household level. Clearfield County received the smallest windfall relative to its budget and spent most of the windfall. Greene County received a medium windfall relative to its budget and also intended to spend most of the payment. Tioga County, which received the largest windfall relative to its budget, planned to save nearly the entire windfall.

In explaining why individuals tend to spend small windfalls and save large windfalls, Thaler (1985), Shefrin and Thaler (1988) and Milkman et. al (2007) argue that individuals establish various "mental accounts" designated for spending or saving in which small, one-time windfall gains are deposited into a "mad money" to spend more freely. Conversely, large windfalls are deposited in more stringently regulated mental accounts. Interviews and ancillary materials from the three counties indicate that a "mental accounting" system described by Thaler (1985), Shefrin and Thaler (1988) and Milkman et. al (2007) existed at the municipal level as the counties faced the windfall payment. The small windfall in Clearfield County was perceived as a "bonus" and was spent more freely. The larger windfall in Greene County was perceived as income, but ultimately spent freely. However in Tioga County, where the payment was largest, nearly all of the payment was perceived as an endowment and was saved.

Keeler et. al (1985) as well as Arkes et. al (1994) further argue that when a windfall occurs without warning and is unexpected to occur again, spending is more

likely (Arkes, Joyner, Pezzo, Nash, Siegel-Jacobs, & Stone, 1994; Keeler, James, & Abdel-Ghany, 1985). The study of the three counties in Pennsylvania supports such claims to an extent. All three counties expressed concern regarding the future of natural gas and the impact fee payment. Therefore, the counties were not certain as to whether or not windfalls would be received in the future, at least partially supporting the qualifications made by Keeler et. al (1985) and Arkes et. al (1994). Further, the size of the windfall payment was uncertain because of the variability in the payment formula.

The other stream concerning windfalls, adapted primarily from public budgeting, proved largely inapplicable in this case study. Factors identified in the literature such as discontent as a result of drilling and environmental concern appeared to have little if any influence on the decision of the counties to save or spend the windfall. Intergovernmental budget cuts and fiscal stress were more germane to the budget decision-making process, however, the fiscal situation in each county was perceived to be fair. None of the counties emphasized that fiscal constraints had significantly influenced their decision to spend or save the windfall payment.

This phenomenon became apparent after examining the PUC Fund Usage Report for Clearfield and Tioga Counties which became available over the course of this study. The PUC Fund Usage Report was unavailable for Greene County at the time this study was conducted. The reports indicated that Clearfield County, which received the smallest windfall payment in absolute and relative terms (approximately $1.1 million and 5.4 percent of the overall budget, respectively), spent 82 percent of the initial windfall payment. Tioga County, which received the largest windfall payment in absolute and

relative terms ($4.8 million and 25 percent, respectively) spent a mere 1 percent of the payment. Without the PUC Fund Usage Report for Greene County, exact numbers were unavailable; however, officials indicated that the County planned to most if not all of the funds in the first year.

Table 9- Comparison of County Spending Patterns

County	Windfall Size	Total Operating Budget 2013	% of Operating Budget	Windfall per Capita	% Consumption
Clearfield	$1,146,000	$21,101,651	5.4 percent	$14	82%
Greene	$3,130,609.68	$25,765,478.38	12.2 percent	$81	NA
Tioga	$4,792,619.48	$19,600,000	24.5 percent	$114	1%

CONCLUSION

Natural resource extraction presents nations, states, and communities with an opportunity to 'get rich quick'. Such an opportunity, however, has the potential for significant infrastructural and environmental costs in addition to the potential for poor overall economic performance in the long-run. To mitigate these issues, nations, states, and communities tax natural resource extraction, as discussed earlier. Some take an additional step to ensure future economic stability by establishing a special fund for the revenue.

Internationally, a number of nations, including Mexico and Indonesia, have successfully established special savings accounts or legacy funds (sometimes called permanent funds) for natural resource revenues (Usui, 1997). In the United States, Alaska, Montana, and New Mexico, among others have also established such accounts (Patton, Taxing Fracking: Proposals for Ohio's Severance Tax, 2012). The purpose of these funds is to provide a source of revenue after natural resource endowments have been exhausted (Central Appalachia Regional Network, 2012). Furthermore, a number of the accounts stipulate that the funds be used to promote economic diversification as a means to mitigate the effects of impending resource busts (Central Appalachia Regional Network, 2012).

While detractors of such funds argue that mismanagement and corruption make the funds ineffective, there have been several successes. Proponents of the establishment of legacy or permanent funds often point to conditions or regulations for usage of the funds as keys to success. The most prominent of these conditions or regulations is to limit

the amount of the fund that can be withdrawn annually. In Norway, for example, funds for oil and natural gas have an annual maximum withdrawal rate of 4 percent. By establishing the limit, Norway ensures that the wealth generated by extraction can be sustained for a longer period of time. Also, the limit minimized the currying of political favors associated with expenditures. In other words, the politicization of the fund was decreased by capping the withdrawal into a smaller annual amount. (Farren, Weinstein, & Partridge, 2012).

Savings, whether in a permanent fund or other account, would provide Pennsylvania with an opportunity to save all or a portion of the wealth generated by natural gas to mitigate the impending resource bust. Such a fund could provide cash in an emergency and/or be used to promote economic development and diversification. Given proper management of the funds, Pennsylvania could dampen or ameliorate the effects of the boom and bust cycle associated with natural resource extraction.

An analysis of the decision to spend or save windfall payments from natural gas revenues in Clearfield, Greene, and Tioga Counties supported the assertions made by the stream of literature adapted from behavioral economics. That is, this study supported the notion that the size of a windfall in proportion to a county's total budget influences the decision to spend or save the payment. Clearfield County, which received the smallest payment relative to the 2013 Operating Budget consumed approximately 82 percent of the windfall while Tioga County, which received the largest payment relative to the 2013 Operating Budget, consumed a mere 1 percent of the payment. Figures were unavailable

for Greene County, although conversations with public officials indicated that the county planned to spend rather than save the windfall payment.

Determining how governing bodies would behave in the face of a windfall payment has important public policy implications. With economic risk and various negative externalities associated with resource extraction, the decision to spend or save revenue generated by Act 13 may have a significant impact on the health and viability of a community in the future. As argued in the section regarding legacy and permanent funds, savings are a tool for nations, states, and communities to mitigate the impending resource bust associated with natural resource extraction. Thus, governing bodies should be encouraged to save at least a portion of proceeds from extractive activity. Given the knowledge of windfall size in the public budgeting arena and how jurisdictions perceive windfalls relative to size, work can begin helping jurisdictions to alter the perception of such payments. In doing so, states, counties, and municipalities can better realize opportunities and advantages associated with savings. For example, communities may be able to better mitigate the future impacts or externalities associated with extraction rather than addressing only immediate impacts.

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